# **International Development Research Centre**

Centre de recherches pour le développement international

STRATEGIC PLAN FINAL DRAFT - DIVISION STATEMENT, PART I HEALTH SCIENCES DIVISION INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

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## PREFACE

Nineteen Eighty Six brought many challenges to the Health Sciences Division. The effects of the 10-week Management Seminar and Program Policy Reviews VII and VIII preoccupied management and staff. "Connectedness" and interdivisional collaboration, decentralization, "themes" and "thrusts" became important elements in the Centre's operations and planning. The Division was assimilating a new director (with new ideas) and making its first attempt at strategic planning. And it had to cope with its first IDDR.

The Division decided to consider these challenges as an opportunity to take a fresh look at many issues, together. The staff undertook the planning process and participated in the Divisional review with skill, enthusiasm and almost unlimited patience, while continuing to carry out their normal activities. I thank all of them most sincerely for their efforts. Special thanks are due to Jim Chauvin, the chairman of the Strategic Planning Group and Robert Hertzog who not only contributed to the work but also kept everybody and everything on track. After 18 months of analysis and debate, the Division agreed upon the concept and plan presented in this document.

We believe the holistic, community based approach to health using a variety of disciplines to help communities improve their health and well-being to be unique. The successful implementation of this approach is the challenge for the Division over the next five years.

## EXECUTIVE SUMMARY

The Health Sciences Division Statement, Parts I and II, and the appended position papers, document the strategic directions the division intends to pursue over the period encompassed by the In-Depth Divisional review, i.e. from 1987/88 to 1991/92. This set of plans is the result of a strategic planning process initiated in September 1985. Although this process proved to be long, and somewhat arduous, the end result is a document that should guide divisional staff in laying the framework for activities to be undertaken by HSD during the next four to five years.

Part I of the HSD Division Statement presents the background information, assessments and analyses that were used in developing the strategic plan. A brief review of IDRC's mandate, mission and objectives, Centre themes and the mission and objectives of HSD is presented at the beginning of Part I to clearly identify the premises underlying the HSD strategic plan. A short description of the division's five programs as they existed until September 1987 is given to provide the reader with a sense of the strategies, approaches and programs from which the strategic plan evolved.

The Health Sciences Division's Strategic Planning Committee initially opted to use a traditional type of "demand and supply" analysis to identify gaps and opportunities in health research towards which the HSD strategic plan could be directed. A description of this crude analysis and the results of same are presented in Part I, Section III of the Division Statement. Two important conclusions arise from this analysis:

 health research activities tend to be discipline-bound and focus on a few of the target population's symptoms of ill health. Few programs or projects follow a holistic approach and fewer examine causal factors that are not biomedical;

(i)

- behavioural health conditions and those related to social and economic circumstances are of increasing concern in developing countries.

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Having identified opportunities in health research, the next step in the strategic planning process was to attempt to determine how the HSD programs addressed these opportunities. To this end, a largely quantitative assessment of HSD support for health research in developing countries is included in Section IV of Part I. While it is difficult to relate the results of the analyses undertaken in this section directly to the opportunities identified, it is apparent that certain gaps and inconsistencies exist. One of the objectives of the strategic plan is to address these areas.

In the last section of Part I (i.e. Section V) several issues having a bearing on the HSD strategic plan, but not otherwise discussed in the preceeding sections, are raised. The Centre's explicitly stated goal of being oresponsive to priority concerns in developing countries, as identified by those countries, is mentioned as being one of the tenets of the strategic plan to be developed. Related to this is the requirement that research supported by the division be of relevance to the Centre's beneficiaries. Another guiding principle is the need to strengthen or build research capacity in developing countries to permit relevant health research that addresses priority needs to be carried out. One final issue noted, and perhaps the most important one, is the need for research projects to elicit the active involvement of community members, recognizing that this involvement can take many possible forms, from community members being consulted in the planning and execution of a project, to communities generating and undertaking projects themselves.

The forward-looking portion of the Division Statement, in essence the Division's strategic plan, is presented in Part II. The strategic plan is based on a decision taken by the division to focus its research program on the <u>community</u> (where a community is defined as any identifiable geographic, social, cultural or political grouping of individuals with common interests and goals). The Division aims to create an environment within which the community, researchers and those responsible for the provision of health services work together to establish effective, sustainable systems of community health.

(ii)

In defining its strategic plan, HSD decided to use a holistic model of health to determine areas of relative emphases for support for health research. This holistic model depicts the interrelationship between the primary factors that interact to determine the health of communities, namely the environment, behaviour, health systems and heredity. The first three of these form the basis for the 3 main programs established by HSD, Health and the Environment, Health and the Community (initially called Health and Human Circumstances and behaviour) and Health Systems. The fourth area, which would involve research on genetic and inherited health factors, was assigned very low priority for a variety of reasons, e.g. large capital investment required, lack of an IDRC comparative advantage, etc. and therefore will not be pursued.

<sup> $(\alpha)$ </sup> The Health and the Environment program is concerned with all factors present in the human environment that may affect health. It concentrates on the "harder" science aspects of health research. It will support research relating to the following themes: Water and Water Use (accessibility to potable water supplies and water quality), the Living Environment and the Working Environment.

) The Health and the Community program will identify and develop action-oriented, community-based research initiatives. Priority will be given to projects that examine how economic and social conditions and human behaviour affect health. The program will concentrate on a limited number of themes in the next few years, namely the Introduction and use of Technologies, Behaviour and Transmission of Communicable Diseases, Methodologies to Promote Participatory Research, Women and Children in Health Promotion, Health Education and Strategies to Improve the Nutrition of Women and Children.

The Health Systems program links the community and its health needs to the health care systems and services that are available and that it requires. The program will also address the relationship between the different levels in the health care system and will focus on approaches to strengthening primary health care. While the range of activities that the program could support is broad, there are four major themes within which activities to be supported will fall. These are the Management and delivery of Health Services, Health Services Planning, Health Policy and the Strengthening of the Analytic Research Capacity of Indigenous Institutions.

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(iii)

The three program areas overlap, forming a continuum that flows from research on health as perceived by community members to research on global health problems as perceived by national, regional or international experts. This overlap is designed to promote intra-divisional collaboration, but at the same time the structure should facilitate taking a multisectoral (inter-divisional) approach to health problems.

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There are many other issues of relevance, such as the HSD approach to strengthening indigenous research capacity and HSD regional strategies, that are not mentioned in this summary. For more information on these subjects the reader is encouraged to consult the Division Statement and the appended position papers. With the introduction of a formal strategic planning process in the division, it is expected that this plan will become a "rolling" one, updated every two years, which will continue to serve as the key divisional document from which all HSD activities are derived.

## INTRODUCTION

"In the view of the Centre, development is a process for the benefit of people and should be consistent with human dignity, which is best fostered in conditions of adequate nutrition, sound health, independence of spirit, pride in indigenous culture and respect for human rights" (IDRC Board of Governors; Delhi, March 1986, B.G. 34/16).

The Health Sciences Division (HSD) is an integral part of the Centre's efforts to contribute to development through research and research supporting activities and to assist developing countries to build and maintain indigenous research and research supporting capacity. IDRC recognized well before most other agencies and institutions that health is a fundamental and essential element of development. Its Board of Governors therefore encouraged the Division to expand the scope and magnitude of its programs.

Since IDRC's inception, HSD has pursued a number of different program directions shaped by conditions both within and outside of the Centre. In the early 1980s the Board again urged the HSD to expand its programs. As a result, the existing areas of activity were formally organized into five Program Sectors reflecting internationally recognized priorities: Maternal and Child Health; Occupational Health and Environmental Toxicology; Health Services; Tropical and Infectious Diseases, complementing the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases; and Water Supply and Sanitation, complementing the efforts of the International Drinking Water Supply and Sanitation Decade 1981-1990. IDRC's unique relationship with developing country researchers and institutions enabled the Division to further refine and modify its programs to reflect the priority health needs of the <u>poor</u> <u>people</u> of the developing world.

In response to the Board of Governor's resolution in the seventh Policy and Program Review (PPR VII), the Health Sciences Division embarked upon a review of its programs, organization, operation and plans in May 1986. Carried out by the Division's staff with the assistance of consultants, this review was, intended to assess the Division's activities and plans in respect to both its mission and objectives within IDRC, as well as its comparative advantages and constraints in working with developing countries. The exercise was also intended to provide a framework for the development and evaluation of divisional programs, identify internal and external opportunities and constraints, and recommend policies and strategies enabling the Division to achieve its objectives. In other words, the Division had decided to prepare its first Strategic Plan. This plan was to guide the evolution of the HSD programs over the next four to five years. An In-Depth Divisional Review (IDDR) began in March 1987. This strategic planning document serves as the divisional statement for this review.

This document's structure follows an analytical framework. The first section describes the Centre's mandate, the changes in policy and program directions considered, and how these may affect the <u>focus</u> of Centre programs and the <u>process</u> of program development. This is followed by a historical overview of the Health Sciences Division's evolution, with particular emphasis on program orientation, the Division's structure, the process used to assess the appropriateness of proposals for funding consideration, and available resources.

The document then presents a simple analysis of health research priorities and needs in less-developed countries (LDCs), as well as the focus, nature and scale of resources invested in this field. This section also assesses the Division's program in terms of its policies, content and orientation, geographic distribution, and the type and number of research groups supported. These elements are related to the global assessment.

Based on the analysis of available data, the document then sets the framework of a strategic plan for the Health Sciences Division and outlines the scope and magnitude of program directions planned between fiscal years 1988-1989 and 1992-1993.

## I. IDRC OVERVIEW

## A. <u>IDRC's mandate, mission, objectives</u>

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The Health Sciences Division is one of four program divisions\* within the International Development Research Centre (IDRC) of Canada. Established in 1970 by an Act of Parliament, IDRC's mandate is

"to initiate, encourage, support and conduct research into the problems of the developing regions of the world and into the means for applying and adapting scientific, technical and other knowledge to the economic and social advancement of those regions, and, in carrying out those objects

- a) to enlist the talents of natural and social scientists and technologists of Canada and other countries;
- b) to assist the developing regions to build up the research capabilities, the innovative skills and the institutions required to solve their problems;
- c) to encourage generally the coordination of international development research; and
- d) to foster cooperation in research on development problems between the developed and developing regions for their mutual benefit."\*\*

The Centre has contributed to development through research and research-supporting activities, using a project mode of operation. It considers that research is a means to an end. Building research capacity, producing new knowledge, and creating linkages among researchers are perceived as essential components of its strategy. The projects it

\*\* Para. 4, IDRC Act

The other three program divisions are: Agriculture, Food and Nutrition Sciences; Social Sciences; and Information Sciences.

supports must contribute to improving the welfare and standard of living of the poor and disadvantaged who are the ultimate beneficiaires of the research. As stated in the Program and Policy Review VII (PPR VII), "relative emphasis should be given to research, research-supporting and experimental development activities that have direct relevance to basic human needs" (p. 29).

All projects submitted for Centre funding are examined in light of the following criteria:

- the significance of the problems addressed;
- the impact on development in terms of growth, equity, and participation;
- the research potential;
- the Centre's comparative advantage.

#### B. Reassessment of Centre strategy

In 1986, the Centre embarked on a review of its strategies, structure and processes. This was dictated by the need to assess its overall focus and programs, in order to ensure that they reflected the world's changing physical, social and economic environments and that Centre resources were adequate and contributed effectively and efficiently to development. As part of the process, a ten-week Policy and Management Seminar for Centre Management took place from April to June 1986. This exercise was intended to develop a framework for the Centre's strategic plan. During the seminar, Centre Officers agreed that "if people are to benefit from IDRC's work, the Centre must endeavour constantly to ensure that the activities it supports reflect in one form or another the essential long-term goals of perspective of the beneficiaries: from the development as viewed sustainable growth, equity, and participation"\* (Report on the Policy and Management Seminar, p. 1). IDRC's ultimate objective must be that of the developing countries themselves: the creation of an indigenous capability

\* Please refer to page 4, PPR VIII 1987 for definitions of these development criteria.

Ender proposals

to utilize science and technology for the benefit of their own societies; and, to identify and solve problems in a manner respecting individual human dignity.

The Centre's comparative advantages are described in PPR VII. The Centre's tradition of responsiveness to requests is one of its distinguishing features. The Centre's scientific credibility is one of its primary assets. At the same time, the Centre maintains a degree of political objectivity and promotes a relationship akin to true partnership between its program staff and developing-country researchers. Compared to most other donors, IDRC's operations are guided by development rather than political considerations; it offers untied assistance: recruits internationally; experiments and innovates; and provides small amounts of funding where immediately needed, a facility ironically beyond the scope of better endowed agencies (PPR VII, p. 21).

The Board and Centre staff noted, however, a shortcoming in the Centre's operational process: the apparent lack of coordination between the Centre's program divisions. The divisions have tended to pursue their own interests, and have established programs specific to particular disciplines with minimal linkages with those of other divisions. While recognizing that divisional autonomy has its advantages, the Board and the staff agreed that the Centre should follow a more coherent approach. As stated in PPR VII:

"Although IDRC's attention has always been largely devoted to development problems, it has been directly [sic] mainly through the medium of subject areas relevant to those problems, rather than holistically on the problems themselves. Supporting Third World scientists in various subject areas through relatively small projects and at the same time remaining sensitive to indigenous capabilities and aspirations, has resulted in a diversity in the Centre's programming that to a large degree merely mirrors the diversity in social, economic and research conditions. This responsive mode has been widely appreciated and generally effective. However, the separate actions of individual divisions have resulted in a very wide scatter of initiatives, with the concomitant risk of being insufficiently "responsive" to those occasions when the coordinated application of

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several disciplines could be more effective. One way of stimulating a more coherent approach and of taking account of regional variations would be to introduce both the "geographic" and the "development problem" criteria when defining a program. Researchable development problems specific to the people of particular regions could be defined and the various disciplines required to tackle them identified, together with the relevant institutions within the region and outside it with the capacity to do so". (PPR VII, pp. 25, 26.)

PPR VII recommended that a thematic approach be used to identify program initiatives. Development "thrusts" would be identified in order "to provide a coherent approach to the resolution of problems common to a geographic region and/or a particular aspect of development" (PPR VII). These thrusts would be well-defined, focused activities carried out within a given time frame. Themes would be used to define long-term fields of interest for Centre programming.

To date five themes have been proposed and formally approved by the Centre.\* Two have direct implications for health: <u>Physical well-being</u> and Food security. Centre-wide thrusts are currently being identified.

PPR VII also recognized the need for increased emphasis on the implementation of research results. As stated in the <u>Report of the Policy</u> <u>and Management Seminar</u>, "greater efforts should be made to ensure that, where promising technologies or approaches result from Centre-supported work, these be followed through the process of introduction and implementation" (p. 5). This means that thought should be given and resources provided to field-testing, introducing, promoting and -- where appropriate and feasible -- popularizing an appropriate technology or approach.

<sup>\* &</sup>lt;u>Themes Working Group</u>, <u>Final Report</u>, March 1987. The five themes are: Skills enhancement; Physical well-being; Economic participation; Food security; and Technological choice.

It would appear, therefore, that the Centre guidelines for program development are changing. There is a shift in emphasis from a vertical program focus within each program division to a modified matrix management process. In addition to pursuing conventional approaches to programming, divisional personnel will be expected to participate in interdivisional teams that assist in developing proposals and administering projects dealing with Centre-defined themes/thrusts. The teams' operating mechanisms have still to be defined.

The IDRC Board and Management have advised that strategic plans should be developed, refined and implemented in such a way as to exploit the Centre's advantages discussed earlier. The Health Sciences Division has developed its strategic plan within this framework. Recognizing that the Centre is undertaking a critical self-evaluation that could modify its operations and programming, we have endeavoured to ensure that the programs and policies chosen will be compatible with the Centre's. This plan is flexible enough to allow whatever changes are required.

## **II. HEALTH SCIENCES DIVISION OVERVIEW**

#### A. History of the Division

The HSD was originally known as the Population and Health Sciences Division and it concentrated primarily on supporting research on methods of fertility regulation, demography and population policy, and the delivery of rural health care services.

The Rural Water Supply and Sanitation sector was created in 1973, following an interagency (IDRC, World Bank, UNICEF, WHO) initiative to identify research needs in the field of environmental health. This sector emphasized the development and field-testing of sanitation technologies. In 1974, HSD hired two program officers specialized in water supply technologies, specifically PVC handpumps. Projects' research focus shifted to cover the development and testing of innovative water supply and sanitation (WSS) technologies.

In 1976, the Tropical Disease sector was established to support research activities related to the recently-created UNDP/World Bank/WHO TDR program. That same year, the demography and population policy program was transferred from the Health Sciences to the Social Sciences Division.

In 1978, the divisional Director formally reorganized the Division into four sectors: Fertility Regulation Methods; Rural Health Care Delivery; Tropical Disease Research; and Rural Water Supply and Sanitation. This was similar to structures adopted by other aid organizations. Research under the rubric of Fertility Regulation Methods related primarily to the development of contraceptive technologies. The Rural Health Care Delivery sector concentrated on innovative means of delivering health services to rural areas of the Third World. The Tropical Disease Research sector, which later changed its title to Communicable and Non-Infectious Diseases, focused on research into the epidemiology and control of sexually transmitted diseases. At the same time, emphasis within the Rural Water Supply and Sanitation sector shifted from the development of technologies to the acceptance and correct utilization of technologies.

The appointment of a new Director in 1983 brought further structural and program modifications. Some of these changes were cosmetic: the titles of the Communicable and Non-Infectious Diseases, Rural Water Supply and Sanitation, and Rural Health Care Delivery sectors were changed to Tropical and Infectious Diseases; Water Supply and Sanitation; and Maternal and Child Health sectors. Research related to Fertility Regulation was de-emphasized and greater emphasis was placed on research on occupational health and environmental toxicology and on health services. The orientation of activities within each sector was largely left to the discretion of responsible Associate Directors.

From 1983-1985 there were no major changes to the HSD program and sectoral programs continued to evolve relatively independently. In 1986, however, the Division's five sectors began to focus their programs and activities directly upon the health needs of the rural and peri-urban poor. These programs are described in the following section.

## B. <u>Status of the Health Sciences Division</u> \*(September 1987)

#### 1. Mission and objectives

The Health Sciences Division's mission is to support research into all aspects of the development of effective community-based health systems that will contribute to improving the health and well-being of the rural and peri-urban poor.

Specifically, its objectives are:

(a) To identify health-related needs and priorities in communities and develop appropriate health (care) systems to meet those needs (health systems research).

While the Division's organization remained the same from 1983 to mid 1985, the mission, objectives and focus of its programs were refined to better coincide with the Centre's (see PPR VIII pp41-47).

- (b) To develop and apply policies, programs and technologies to improve the health and well-being of women and children (maternal and child health).
- (c) To develop new and improved methods of preventing, diagnosing and controling communicable diseases (tropical and infectious diseases).
- (d) To develop policies, practices and technologies to improve the physical environment of communities and the physical and social environment of individuals (water supply and sanitation, and occupational health and environmental toxicology).

## 2. Research strategy

Three interdependent elements provide the framework for the Health Sciences Division's research strategies: the community, the national health care systems, and national researchers (Figure 1).

- (a) The community is the fundamental unit upon which the research efforts are focused. It is defined as an identifiable geographic, social and/or political grouping of individuals with common interests. The determination of the social and economic dynamics of communities and the determination of community health needs and priorities is a major intermediate research objective. A key element of such research is the methodology, which can vary from participatory action research to more traditional survey-based research, both involving the community. Results of community-based research frequently lead to innovative interventions by the community itself, either within the health sector or in other sectors that directly or indirectly affect community health.
- (b) Health status and problems at the national, sub-national (provincial) and community levels also can be determined by researchers working with national health care systems, using epidemiological and other

research methodologies. Health problems and priorities established at this level can be analyzed and correlated with the community-determined needs and priorities. Appropriate interventions at all levels emerge from these analyses.

(c) National researchers form the critical bridge between the national systems of health care and the community. They develop appropriate methodologies enabling the community to carry out or participate in the research required to determine its needs and priorities and take At the same time researchers must work with appropriate action. national health sector professionals to identify the most cost-effective systems to meet national, provincial and community health care priorities. Resource allocation must be based on appropriate analyses of health issues at all levels, and not be driven by single interest groups.

## 3. Organization

As of September 1987, the Division was divided into five administrative sectors of which four functioned as distinct program units.\* Although the Health Systems Research sector had its own budget allocation, its

<sup>\*</sup> In October 1987, the Division implemented the structure described in <u>Section F</u>. This structure reflects the strategy adopted by the Division following its analysis of the health situation in developing countries; the opportunities for research; the mandate and role of IDRC; and non-IDRC health research strategies, activities and support. Ongoing divisional activities as well as "pipeline" proposals will be continued as planned and will be incorporated into the new structure. The 1987-1988 Program of Work and Budget (PWB) will <u>not</u> be revised. The 1988-1989 PWB has been drawn up according to the new plans, programs and organization. Figures 2 and 3 show the Division's old and new structures.

professional positions were vacant. It operated under the aegis of the Maternal and Child Health sector.\*

## (a) Maternal and Child Health (MCH)

The major initiatives undertaken by Maternal and Child Health were:

- i) Support to perinatal health research, including research into risk factors. A transdisciplinary approach was encouraged. The Division hoped to strengthen the Latin American perinatal health network during the next two years and then gradually extend activities to other regions, especially Africa and, more specifically, Angola and Mozambique. Wherever possible, use would be made of Latin American researchers' skills developed in previous perinatal health projects. The creation of networks of researchers remains one of the Division's important strategies.
- ii) In family planning, the sector promoted action research, especially in Africa where high growth rates and major health problems are associated with inappropriate or inadequate family planning. The approach was strictly within the health field, considering factors such as health and nutritional benefits. As a somewhat related topic, the Division will begin to support research into the behavioural aspects of the control of AIDS, especially in Africa.
- iii) Activities supported in the nutrition area examined behavioural aspects and the health impact of nutrition. In addition, opportunities for research into educational interventions were pursued. Nutrition is an area of substantial interdivisional activity.

<sup>\*</sup> Two of the three professional posts in the Health Systems (Research) Program were filled by 1 October, 1987, after the Division's reorganization. The Associate Director of the Program (the third position) will join the division early in January 1988.

- iv) Research into the reproductive health of women, including young adults, was supported. Emphasis was again placed on social and behavioural components.
- v) **Promotion of improved health,** in general terms, sought to improve the health of women and children. This included research into the relationship between women's work and the health of their families.
- (b) Tropical and Infectious Diseases (TID)

The sector used two broad-based approaches in working with researchers: a problem-oriented approach; and an activity-oriented approach. These approaches are complementary in that activity-oriented support is associated with identified or perceived "problems" that may be a single disease or inter-related spectrum of diseases. This sector supported the following activities:

- (i) Problem-oriented approach:
  - Infectious diseases;
  - Vector-borne diseases;
  - Sexually transmitted diseases, including AIDS.
- (ii) Activity-oriented approach:
  - Field research/application of diagnostic methods;
  - Epidemiological studies in relation to possible interventions;
  - Social and economic aspects of communicable diseases;
  - Vaccine-related studies;
  - Health impact of macro-development schemes including migration and refugees;
  - Community-mediated preventive methodology initiatives;
  - Integrated disease control strategies.

In following the activity-oriented approach, particular attention was paid to community-generated efforts aimed at self-sustained health maintenance or disease control measures. The proposals relating to the health impact of macro-development schemes, community-mediated preventive initiatives, and integrated disease control strategies reflect this special emphasis on community-based activities.

## (c) Water Supply and Sanitation (WSS)

Reducing the incidence of environment-related diseases was the primary objective of the WSS sector. The sector sought to accomplish this by supporting research/demonstration projects that used appropriate interventions to improve the environmental health of disadvantaged populations living in either rural or peri-urban communities. The WSS sector addressed two community problems: lack of potable water and lack of adequate sanitation. It also placed priority on the long-neglected area of sanitary food handling practices.

All WSS activities could be divided into two categories: research grants; and dissemination of research results. In carrying out these researchers were of individual the capabilities activities. strengthened through the experience they gained in planning and well, institutions were activities. As project implementing strengthened through the training of personnel, the development of The WSS sector's activities administrative capacity, and so on. coincided with those of the International Drinking Water Supply and Sanitation Decade, and included five major areas:

- (i) Technology development: the development of new and improved water supply and sanitation technologies.
- (ii) Waste reclamation systems: the recovery and/or reutilization of valuable resources from domestic and agricultural waste.
- (iii) Personnel development and training: the development of innovative personnel training programs.
- (iv) Social and managerial studies: studies on the social, economic and managerial aspects of water supply and sanitation programs (this includes studies to determine the nature and magnitude of environmental problems within rural communities).

(v) Sanitation impact studies: biomedical/environmental studies which focus on evaluating how water supply and sanitation interventions reduce tropical and infectious diseases (this area created a bridge between HSD's environmental and biomedical research activities).

## (d) Occupational Health and Environmental Toxicology (OHET)

The OHET sector encouraged research into ways of improving the physical living and working environments of the rural and peri-urban poor. Collaboration and input by colleagues from other sectors (notably WSS and MCH) and other Divisions (particularly AFNS and SS) were actively pursued.

The sector emphasized activities dealing with chemical contamination and poisoning of populations, with special reference to pesticides. other agrochemicals, heavy metals, organics and solvents. Projects relating to the occupational and environmental risks associated with pesticides, i.e. through water and food contamination as well as misuse (inadequate storage, labelling use), were accorded special and Activities supported in this area ranged from descriptive attention. epidemiology to KAP (Knowledge, Attitude, Practice) studies -- the latter especially at the rural community level -- where major opportunities for joint endeavours with Social Sciences were expected. Research into intervention strategies was encouraged as a logical extension of the first two types of activities. Safer technologies, community education, communication support material and the formulation and enforcement of regulations were of primary interest. For example, an initiative undertaken with AFNS could result in a program to develop a safer portable pesticide sprayer. Alternate, less toxic methods of pest management were also of great interest. This would require collaboration with the TID sector (vector control) and AFNS.

OHET also promoted research into the industrial contamination of water resources, notably by heavy metals and organic residues. Parallel to this, baseline research on industrial chemical intoxication of workers by heavy metals and solvents was being supported. Whenever suitable, researchers were encouraged to concentrate on small-scale, community-based industries and to use participatory research methods.

Because industrial accidents are major occupational risks everywhere, research on their prevalence, incidence, community significance and preventive measures were encouraged. In addition, research into non-communicable, dust-produced respiratory diseases was a priority.

(e) Health Systems Research\* (HSR)

The Health Systems Research (HSR) sector was and is seen as the "bridging" sector in the Division, supporting research to develop appropriate health services and to identify particular opportunities for research likely to solve priority health problems. The sector exists mainly to study the operations and cost/effectiveness of health delivery systems in their particular socio-cultural, material, and political environments.

The HSR sector's program is closely tied to the Division's mission in that it supports research concerned with community-oriented health (care) systems. Projects involving the examination and evaluation of alternative health (care) systems, including health maintenance at the community level, are encouraged. Emphasis is placed on analyzing the cost-effectiveness and efficiency of the structures or systems, with particular attention to systems that are community-initiated and self-sustained.

As the Health Sciences Division moves toward placing greater emphasis on community health needs, it is expected that the HSR sector will assume an increasingly important linking role between the communities

<sup>\*</sup> The Health Services Research Sector has become the Health Systems (Research) [HSR] program under the new divisional structure. The new HSR program focus includes the activities described in this section.

and the division's other programs. HSR will also greatly assist in coordinating interdivisional support for community-initiated research activities with indirect links to health such as women's education and resource management.

The program also expects to support activities aimed at developing appropriate research methodologies in health services, identifying the health status of communities, and providing training in health systems research. Although not the primary focus of the program, these activities will be an important part of its operations.

## (f) Special Initiatives \*

Numerous benefits can be gained by jointly developing and funding projects and by coordinating the allocation of the limited funds available for health research. IDRC and the HSD must participate financially and technically in selected initiatives of this type. Because these activities do not readily fall into any of the existing sectors, the Special Initiatives (SI) sector was established in the 1986/87 fiscal year. It operates on a divisional basis without specifically assigned staff.

SI has supported a number of activities, including the Independent International Commission on Health Research for Development; the revolving fund for the development of technology appropriate to rural health care; and the establishment of an information service and newsletter for Canadian researchers interested in international health research.

A comprehensive analysis of appropriations by program sector, the types of research and recipient groups supported, geographic distribution, and the subject of research projects to date is presented in chapter IV of this document.

Special Initiatives will continue to exist within the new organizational structure.

## 4. Project and program development

The development of sectors and their programs depended on the expertise proposals; workshops and staff; publications; research of sectoral conferences; discussions with key informants; reports from regional offices, other funding/aid agencies and NGOs; and, information gathered by No sector was a program onto itself. The staff during field trips. development and administration of some of the proposals submitted to the intersectoral collaboration while those with a dem and ed Division multidisciplinary focus required collaboration with other divisions.

Within this framework of five sectors, the Health Sciences Division provided support for research projects which met the following criteria:

- (i) Acceptable scientific quality;
- (ii) Relevance to the health problems of the country and/or region as indicated by crude indicators of health (IMR, MMR, LE, GNP\*);
- (iii) National and regional priority of the problem addressed;
- (iv) Absorptive capacity of the national health research system and the proposing institution(s);
- (v) Relevance to HSD program priorities;
- (vi) Potential for the results being adopted by the health system within a reasonable period and the potential impact on the health of the poor;
- (vii) Agreement with IDRC's mandate and philosophy.

As the HSD program evolved over the years, so did its structure in order to enable it to pursue established program directions. Structural changes during the past few years were basically incremental. The most notable was the creation of a Health Services Research sector with two professional and one support staff positions.

Figure 2 presents the division's structure until September 30, 1987.

LE: Life Expectancy at Birth

IMR: Infant Mortality Rate

MMR: Maternal Mortality Rate

GNP: Gross National Product

## 5. Management and administration

Several groups or committees discharged specific responsibilities within this framework and will continue to do so under the new structure. These include the:

## (a) Projects Review Committee\*

This committee screens all proposals that are to be presented to the Board for approval. The Committee is made up of the Director and Associate Directors.

#### (b) (Associate) Directors Group\*

The Associate Directors meet at least once per month to discuss policy issues as well as program and administrative matters.

## (c) Professional Staff and Staff Committees\*

The Ottawa-based professional staff meet at least quarterly to discuss substantive and administrative matters. Support staff meet at least monthly to discuss division operations. Regional office staff participate in meetings when they are in Ottawa. Meetings of the entire professional staff, including Ottawa-based support staff, are held once a year, usually for a two week period. This annual meeting is highly organized and focuses on the operation of the division at the Regional Office level, interdivisional collaboration, and important administrative matters such as communication and appraisals.

### (d) Publication Committee

This committee was established to promote the publication of research results from HS supported projects. The committee, which meets a few times a year, reviews the publication pipeline as well as requests for

The recently appointed Deputy Director will participate in these groups.

publication and monitors the allocation of the publication budget. The committee coordinates divisional collaboration with the Communications Division with respect to both publications and films.

## (e) Strategic Planning Committee\*

This Committee was formed to draft a strategic plan for consideration by the division's professional staff and to oversee the preparation of the related Divisional Statement for the IDDR. The committee will revise and modify the plan biennially and as required.

In addition to these intradivisional groups, HSD participates in many interdivisional groups or committees. For example, HSD staff are members of the working group struck to develop integrated, multi-disciplinary approaches to problems relating to pesticides, women in development, nutrition and support for the Bharatiya Agro-Industries Foundation (BAIF) at Pune, India. Moreover, HSD staff frequently exchange opinions and expertise with colleagues in other divisions. They also participate in numerous Centre administrative committees, eg. EDP, LINK, administration. Although much of this collaboration is informal, it is extensive and is seen as an important part of all officers' responsibilities, contributing significantly to their workload.

## C. Need for a divisional strategic plan

The evolutionary process leading to the HSD's present program focus, activities and structure can best be described as incremental. A number of factors influenced this process, including the preferences of each divisional Director, the establishment of major program thrusts by collaborating funding agencies, and the experience and expertise of individual program staff.

\* The recently appointed Deputy Director will participate in these groups.

Each Director decided on overall program emphasis and priorities while research initiatives and scope of activities within each sector were largely left to the discretion of the Associate Directors in consultation with sector staff. This has contributed to what has been described as a scattered or 'shot-gun' approach to supporting health-related research.

The arrival of a new Director in May 1985 sparked interest in reassessing the Division's objectives and "modus operandi". At both the September 1985 and May 1986 staff meetings, there was agreement in principle that HSD should focus its program and that the Division's program should be an integral part of the Centre's. However, it was not clear how this could be accomplished, whether all the necessary information was at hand to identify a possible focus or theme, and what divisional structure was necessary for achieving the objectives. (HSD Annual Staff Meeting Minutes of Plenary Session, Monday, May 26, 1986, p. 2.)

Through PPR VII and the Policy and Management Seminar, the Centre was moving in a similar direction. Therefore, the Division decided to give highest priority to the establishment of a "rolling" four to five year strategic plan. This plan was to be based on the concepts described in PPR VII and PPR VIII. The organization and operation of the Division was to be based on the conceptual framework of its strategic plan. The plan would be reviewed and updated every two years and would include mechanisms for reviewing, evaluating, and updating both content and schedule.

## III. ASSESSMENT OF THE EXISTING HEALTH RESEARCH SITUATION

The health research needs assessment was intended to provide background information that would enable us to determine the priority health research needs in LDCs, activities underway and needed, and the resources invested in this area. To do so, we divided the health research needs assessment into three components:

- 1. The demand assessment identified priority areas for health and health-related research in developing countries. By studying the trends in recent demographic and health indicators it should theoretically be possible to identify priority concern areas and those requiring research.
- 2. The supply asssessment provided information on the nature and quantity of health research and/or the health problems in developing countries. In addition to inventorying projects and their distribution, this required the study of the content and orientation of ongoing research, of means of setting priorities, and of the relationship between health research and needs.
- 3. The needs assessment analyzed the relationship between present health research efforts and the identified health research priorities.

Our analysis uses a traditional approach, dependent on standard definitions and reasonably valid data. The issue becomes more complex when 'demand' emanates from a number of groups and/or levels of decision-making, from a sick individual to the Ministry responsible for national health services for example. In addition, demand can be based on costs and/or consequences. These are not necessarily the same and may not even correlate. Similar problems arise with attempts at a needs assessment. Finally, even if agreement was reached on demand and needs, the available data is woefully deficient.\* The methodology and data used by the HSD Strategic Planning Committee were the best that could be arrived at in the time allocated for the study. Interestingly, the committee identified the same conceptual framework and broad priority areas as the IICHRD planning meeting.

The IICHRD study will take some three years to complete and cost US1.5 million.

## A. Demand asssessment

Three categories of health indicators are most commonly used for comparing the health status of different countries: infant mortality rates; birth weight; and life expectancy at birth. Most of the data available must be used with caution, however, because many developing countries lack valid health information. International comparisons of morbidity and the frequency of certain illnesses are often more comparisons of the effectiveness of the particular disease-reporting system. Also, comparisons of crude death rates in different countries are often indications of the different age distributions in the populations.

## 1. Indicators of health status

The one most frequently chosen indicator for health status comparison is the **"infant mortality rate"** [IMR]. By definition it gives no indication of what occurs in other age groups, especially if the infants later die of malnutrition, gastrointestinal infection, measles, or of other

\* The HSD is promoting and supporting the Independent International Commission on Health Research for Development (IICHRD) to examine these issues. A background paper by Richard Feachem et al entitled "Identifying Health Problem and Health Research Priorities in Developing Countries" was presented to a July 1987 three-day IICHRD planning meeting which included some 47 senior professionals. It summarized the methodological and data-related problems in this area. This document is available from the HSD. causes. The available data for 1986 show that 79 countries report an infant mortality rate of 50 per 1000 live births or higher, with 47 of them exceeding 100 per 1000. These countries are unevenly distributed in various regions, although 32 countries with an IMR at or over 100 per 1000 are located in Sub-Saharan Africa.

"Life expectancy at birth" is a useful indicator when reliable information exists to support its calculation. It takes into account the newborn's chances of survival in subsequent age cohorts. It is worthwhile noting that over a third of countries and of total world population have a life expectancy at birth of lower than 60 years: 38 African countries fall within this category, most of them having life expectancies of 50 years.

The third indicator of health status is **"birth weight"**. This provides an indication of the health status of mothers and young children, and is often used for further analysis in conjunction with geographic and socio-economic criteria. Unfortunately, this indicator is not widely available and/or accurate in those countries where the proportion of newborns weighing less than 2500 g. is highest. In 1986, it was estimated that 17% of newborn infants had a birthweight of less than 2500 g., with a significant proportion of them being at or below 2000 g.

## 2. Indicators of coverage by primary health care services

Four sub-indicators are commonly used to measure the proportion of people having at least minimal coverage by Primary Health Care [PHC] services. They are: safe water supply and sanitary facilities; immunization coverage of children at one year of age; availability of local health care; and presence of adequately trained health personnel for maternal and child health services.

As defined by WHO, the availability of safe water supply means that a percentage of the population has access to safe drinking-water within 15 minutes' walking distance; the availability of adequate sanitary facilities is determined by adequate facilities in the home or immediate vicinity; and, the availability of local health care, the possibility of

obtaining at least 20 essential drugs within one hour's walk or travel. These indicators do not incorporate any measure of quality or appropriateness of the facility or service or indication of whether they are maintained and/or sustained over time.

Most countries provide data on immunization of children during the first year of life for the target diseases of the Expanded Programme on Immunization (EPI): diptheria, tetanus, whooping cough, measles, poliomyelitis and tuberculosis. For DPT-Polio, the percentage coverage for the African Region\* is between 28-30% of all <u>registered births</u>, while the rates are approximately 40% and 50% in the Southeast Asian and American regions respectively. There are, however, substantial variations in the coverage rates among countries within the same region.

Data is not available about the portion of populations covered by local health services for almost a third of all countries, containing approximately half the world's population. According to available data, local coverage exists in approximately 48% of the African region, compared to 71% and 73% for Asia and the Middle Eastern countries respectively, and over 85% for Latin America. However, more than two-thirds of countries do not provide data on the presence of adequately trained health personnel for MCH services. The accuracy of this data varies substantially, making country comparisons difficult.

Some "Socio-economic indicators" relate directly to health and health policy, for example the percentage of GNP spent on health, and the percentage of the health expenditure devoted to primary health care. This data, although available in many instances, usually includes only public sector expenditures. Indicators such as "adult literacy rate", in particular the female literacy rate, the proportion of the population below the poverty line, etc. could give useful indirect health information if analyzed in association with data on health systems and primary care services.

\* This refers to the six WHO Regions in Africa.

Table 1 provides data on several health indicators for 49 countries. The countries included are those for which data were reported for <u>all</u> the health indicators. The general situation underlying the information conveyed in this table is well-known:

(a) overall, the standard of living in developing countries is low;

- (b) fewer services and lower coverage are the norm for rural and for low-income urban areas in comparison to the urban middle and upper class areas;
- (c) despite increased investments in "health", sustained and significant improvements to health and well-being for the majority of developing country inhabitants remain to be demonstrated; and
- (d) the natural growth rate of the populations in these countries is not declining and outstrips the rate of growth of expenditures for PHC programs.

Table 2 provides data on age specific death rates for six International Disease Classification categories which consistently register the highest infectious and parasitic diseases (IDC codes 01-07), meningitis rates: (IDC code 22), respiratory diseases (IDC codes 31-32), and for two diseases which rank high in developed countries (malignant neoplasms (IDC codes 08-14) and acute myocardial infarction (IDC code 270). Accidents (IDC codes E47-E53) were also included because of the reported high death rates. Data was collected for 11 less-developed countries (LDCs) and for Canada to enable comparisons of the reported figures. The choice of countries was based again on the availability of data. A comparison of the data in Tables 1 and 2, particularly IMR, percentage coverage for water supply and sanitation in rural areas, and the age/sex specific death rates for infections parasitic diseases, respiratory diseases, and and meningitis, indicates a possible correlation between these parameters.

# TABLE 1

# HEALTH INDICATORS FOR SELECTED LDCs

	IMR	% COVERAGE SAFE WATER	% COVERAGE SANITATION	% LOCAL HEALTH CARE	% NATURAL INCREASE
		<u>Urban/Rural</u>			
EAST AFRICA Burundi Ethiopia Kenya Lesotho Malawi Mozambique Uganda Tanzania Zambia	130 144 87 130 151 159 130 137	33 22 93 42 (61) 37 14 82 54 82 2 45 12 85 47	52 21 12.4 55 10 13 78	45 44 - 50 54 40 42 73	2.8 2.6 4.1 4.1 3.2 2.5 3.3 3.5
Zimbabwe	85	70 32 100 10	47	70 71	3.3
WEST AFRICA Burkina Faso Gabon Gambia Ghana Liberia Mali Sierra Leone Senegal	149 114 198 97 150 149 158 116	50 26 75 34 100 33 72 39 50 24 58 20 58 8 (63)	8 50 77 26 21 21 21 21 27	70 80 90 64 35 20 36 -	2.8 1.6 1.9 3.2 3.1 2.8 1.8 2.6
MIDDLE EAST/NORTH AFRICA Egypt Morocco Somalia Sudan Tunisia Yemen Yemen Dem Rep	73 99 163 140 60 173 149	93 61 (57) 60 20 (40) 98 79 100 21 73 39	70 46 17 5 46 12 45	99 20 70 91 25 75	2.7 2.5 2.5 2.9 2.8 3.0 3.0

World Health Statistics Annual WHO, 1986, pp 36, 38, 41.

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TABLE 1 (Cont.)

# HEALTH INDICATORS FOR SELECTED LDCs

	IMR	% COVERAGE SAFE WATER	% COVERAGE SANITATION	LOCAL HEALTH CARE	% NATURAL INCREASE
		<u>Urban/Rural</u>			
LATIN AMERICA Bolivia Chile Colombia Costa Rica Cuba Dominican Republic Ecuador Guatemala Haiti Honduras Mexico Nicaragua Peru	124 22 52 18 15 63 77 80 124 81 35 75 127	78       12         100       18         100       76         93       86         (61)       85         85       33         98       21         90       26         73       25         91       55         90       40         98       9         73       18	24 83 68 76 31 27 45 36 19 44 56 28 35	94 87 95 - 59 - 51 - 51	2.8 1.6 2.3 2.8 1.2 2.5 1.7 3.1 2.7 3.4 2.7 3.5 2.6
SOUTH ASIA Bangladesh India Nepal Pakistan Sri Lanka SOUTHEAST ASIA Indonesia Malaysia Papua New Guinea Philippines Thailand	128 114 152 90 34 98 19 72 58 45	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4 8 2 19 66 30 75 10 56 45	45 75 64 90 - 93 -	2.3 2.2 2.3 2.8 1.8 2.0 2.4 2.1 2.3 1.6

# TABLE 2

# AGE SPECIFIC DEATH RATES/100,000 POPULATION FOR SELECTED IDC CATEGORIES

COUNTR Y (YEAR)		ALL	INFECTIOUS/ PARASITIC DISEASES (01-07)	MALIGNANT NEOPLASMS	MENINGITIS	ACUTE MYOCARDIAL INFARCTION	RESPIRATORY CONDITIONS	ACCIDENT
	-			_(00-14)	(22)	(270)	(31-32)	(14/-153
(1984)	0-1	699.3 811.1	4.0 10.6	178.2 3.2	0.3 4.5	110.1	20.2 12.5	37.5 20.2
COSTA								
R ICA	T	396.5	17.4	77.9	1.8	32.2	16.3	27.1
(1983)	0-1	1,864.2	201.5	6.9	31.5		34.5	23.0
Honduras	T	479.3	80.9	14.9	1.6	3.2	13.5	53.9
(1981)	0-1	2,296.0	747.7	2.5	11.8		116.8	8.1
GUATEMAL	A T	1,009.6	336.1	28.5	5.6	6.6	89.8	35.8
(1979)	0-1	7,393.0	2,068.9	3.0	49.9		730.9	16.5
DOMINICA	N							
REPUBLIC	T	462.9	48.5	27.7	4.5	19.5	12.2	21.6
(1982)	0-1	<b>3,213.6</b>	667.2	10.2	78.3	1.0	129.0	2 <b>6.</b> 1
PERU	T	520.1	100.1	35.3	2.1	10.8	74.9	30.3
(1981)	0-1	2,908.2	642.3	0.6	14.2		478.8	17.4
EGYPT	T	996.1	24.2	18.5	1.2	0.5	64.6	19.8
(1980)	0-1	7,601.7	298.0	5.1	8.2		988.8	1 <b>5.9</b>
SRI LANK/	A T	617.2	49.1	27.9	5.0	12.9	20.5	31.8
(1980)	0-1	3,439.8	356.1	12.2	70.8	3.8	248.6	29.4
THA ILAND	T	504.2	40.3	24.7	1.4	0.8	<b>8.9</b>	<b>34.6</b>
(1981)	0-1	1,252.5	162.1	3.1	11.2		96.1	10.9

1 Ref. Who 1983-1986 Annual Reports.

# 3. Canadian emphasis on health research ODA

Despite the calls for more technical assistance to develop and implement programs aimed at improving health status, little information exists on priority areas for health research to identify such programs. Although accurate figures are not available, it is clear that health research is a small component within development assistance programs. An indication of the relative share of <u>Canadian</u> official development assistance [ODA] to health research is that as per Table 3, in FY 1986-87, total disbursements on health research in developing countries by IDRC accounted for only 0.44% of Canadian ODA. Disbursements on health research in developing countries were 14.1% of Canada's 1986-87 <u>health-related ODA</u>.

### TABLE 3

### DISBURSEMENTS ON HEALTH-RELATED CANADIAN ODA

	1984 /85	1985/86	<u>1986 /87</u>
CIDA			
- Health	25.4	29.3	49.5
- UNICEF (Note 1)	8.0	8.0	8.7
Health & Welfare Canada - WHO	7.1	7.4	9.6
External Affairs - PAHO	4.2	4.8	4.6
IDRC	9.0	13.0	11.9
Total Health-related Canadian ODA	53.7	62.5	84.3
Total Canadian ODA	1,810	2,170	2,700
IDRC Health-related ODA as a percentage of total Health-related Canadian ODA	16.8%	20.8%	14.1%
IDRC Health-related ODA as a percentage of total Canadian ODA	0.50%	0.60%	0.44%
Health-related ODA as a percentage of total Canadian ODA	2.96%	2.88%	3.12%

Source: CIDA Health Unit

Note 1: This figure represents the 60% of CIDA's total contribution to UNICEF that reflects UNICEF's spending on health.

# 4. Other demand factors

Lack of published information on the priority areas for health research in developing countries made us turn to alternate sources of information. These include analyses by HSD Regional Representatives; a LARO-initiated report entitled "The Distribution and Characteristics of Health Research in Colombia" by Dr. Beatriz Elena Gonzalez; and a study commissioned by the Strategic Planning Committee on priority areas for health research in developing countries. This study had three main components:

- (i) A survey of 15 "experts" identified by IDRC, in order to solicit their views on perceived priority areas for health research in developing countries;
- (ii) A survey of 10 Canadian-based non-governmental organization (NGOs); and,
- (iii) A limited review of annual reports, conference proceedings and other publications from bilateral and multilateral government aid agencies, foundations, etc., to ascertain their priorities in health research.

These studies highlight the following issues:

- (a) The health status of communities and development are increasingly interdependent.
- (b) Despite the efforts of funding agencies and national governments, reported infant mortality remains unacceptably high in many developing countries.
- (c) Most research focuses on documenting and/or solving a health problem such as a disease, but often neglects to investigate its causes and to consider the development and testing of strategies to alleviate the effect on people afflicted.

- (d) It is difficult to plan and perform research projects in such a way that the results are implemented: do we bridge the gap between research and action programs?
- (e) Health is influenced by many factors including housing, food security, basic water supply and sanitation services, employment and education -in essence, by the equitable distribution of resources within a society. Each of these elements tends to be treated as a separate area for research, however. The creation of a more holistic approach to understanding the determinants of health, research on intersectoral strategies and their impact is a priority. This multisectoral research is of particular importance at the "micro" or community level.
- (f) Public health care (PHC) is an accepted strategy for improving health and well-being. Significant levels of capital resources have been invested in developing, implementing and evaluating the impact of this approach. But the apparent poor performance/impact of PHC programs may be due to a lack of management expertise in their development and implementation. The question is not what services to deliver, but rather how they can be most effectively delivered.
- conditions, including infectious health (g) Environmentally-related diseases, have perhaps the greatest effect on morbidity and mortality But environment is not restricted to housing and basic in the LDCs. Occupational health and safety is of increasing service conditions. concern in these countries, as evidenced in part by an increase in morbidity and mortality statistics related to accidents and substandard working conditions. Related to this is the subject of child labour and its effect on the well-being of future generations. The effect and misuse of pesticides and industrial effluent is also a growing Research into possible means of preventing environmental concern. health threats is of great importance.
- (h) Communities constitute a system, whether they are permanent or temporary, legal or illegal. Social, organizational and political structures and processes evolve over time in response to needs identified and articulated by the community. A component of this is

the way community members address health-related issues. Yet most development-related health programs, be they disease control or immunization, are imposed. Community members become subjects. If resources are to be invested in the communities and the well-being of members improved, the recognition and analysis of existing structures and processes that deal with health-related problems should be supported.

- (i) Non-communicable diseases, particularly drug, tobacco and alcohol abuse, are becoming topics of concern in developing countries. Although some European and North American countries now report a levelling off, even a modest decline in alcohol consumption, the global trend is still one of growth. Developing countries record the steepest rise in cigarette consumption. Moreover, available figures do not include the consumption of home-made and locally manufactured cottage-industry cigarettes. (World Heath Statistics Annual WHO, 1986, p. 17). Because cigarettes in developing countries often have far higher yields of tar, nicotine, and carbon monoxide than those consumed in developed countries, the potential smoking hazard is comparatively greater.
- (j) Rapidly declining morbidity and mortality rates as well as declining natality rates, particularly in Asia, will result in an aging population. Many families will be multigenerational and problems of dependency will arise. The aged in developing countries are still cared for by the extended family. With rapid social change, especially urban migration, this will change, however. The implications of older, dependent populations and changes in health profiles will have to be examined, as will their consequences for health and social services.
- (k) The past three decades have witnessed the unprecedented growth of cities in LDCs. This trend is expected to continue. By 2000, it is estimated that 75% of the Latin American population will live in cities, most in peri-urban slum and squatter settlements. Asia is projected to become the most urbanized region of the world. By 2025, approximately 60% of the African population is expected to live in cities. Priority areas of research will include questions related to

the allocation and distribution of health and social services, problems related to high density living conditions, overcrowding and poor environmental conditions, and the management of community services.

It is clear that priority research areas cover a wide range of topics, both disease-specific and thematic. Needs vary from country to country, even between regions within countries, but the poor quality of data available makes it difficult to carry out micro-level analyses of health research priorities. Two trends are emerging, however for health research in developing countries. First, conditions of ill-health other than the traditional "tropical diseases" are of growing importance. Second, it is recognized that more research must be carried out on management aspects of health care delivery and on new strategies for developing and for promoting the diffusion, acceptance and utilization of health services and other technologies designed.

### B. Supply assessment

Although organizations such as the Pan-American Health Organization (PAHO) and the Organization for Economic Cooperation and Development (OECD) have completed inventories of research projects supported by major funding agencies, little information is available on the process used to select research projects. Moreover, many of the projects listed reflect the funding agencies' priorities and are directed by expatriate researchers. Information on LDC government financial and human investments in health research is seriously lacking.

Because of the limited time available to complete this study, we decided to restrict our supply analysis to preparing an overview of the content and focus of the health research activities supported by 32 major multilateral, bilateral and non-governmental organizations, foundations, research centres, councils, institutes and programs. As summarized in Table 4, we divided health and health-related issues into 11 broad areas or topics regardless of the type or focus of the research. A literature search was carried out to obtain information on health research policy and on on-going activities and fields of interest. We did not include support for the delivery of health programs and health development.

TARLE 4

# Bilateral, Multilateral and Non-Governmental Agencies Providing Support for Health Research

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<ul> <li>3. Diarrheal diseases</li> <li>3. Diarrheal diseases</li> <li>- ICDDR, B</li> <li>- RAWOO</li> <li>- RAWOO</li> <li>- RAWOO</li> <li>- SAREC</li> <li>- Wellore, India</li> <li>- Wellore, India</li> <li>- WHO/CDD</li> <li>- WHO/CDD</li> <li>- WHO/CDD</li> <li>- MHO/CDD</li> <li>- Traditional medicine (including medicinal plants)/medical</li> <li>- Joint Meeting of Belaian, Dutch, and German Tropical Medicine</li> <li>- SAREC</li> <li>- SAREC</li> <li>- SAREC</li> <li>- SAREC</li> </ul>	<ul> <li>8. Population, family planning and Human Reproduction</li> <li>ADAB</li> <li>ADAB</li> <li>ADB (US)</li> <li>AID (US)</li> <li>Ford Foundation (population- related matters)</li> <li>Population Council</li> <li>Rockefeller</li> <li>UNF PA</li> <li>WHO/Human Reproduction Program</li> </ul>	<ul> <li>11. Water supply and sanitation <ul> <li>ADAB</li> <li>AID/WASH Project</li> <li>AID/WASH Project</li> <li>GATE</li> <li>GATE</li> <li>GATE</li> <li>IFS (rural technology including housing)</li> <li>PAHO</li> <li>PAHO</li> <li>SAREC</li> <li>UNOP/World Bank Project</li> </ul></li></ul>
<ul> <li>2. Health services <ul> <li>AID (US)</li> <li>Joint Meeting of Belgian, Dutch and German Tropical Medicine Societies</li> <li>PAHO</li> <li>RAWOO</li> <li>RAWOO</li> <li>SAREC</li> <li>UNICEF (operational research revaluery)</li> <li>UNICEF (operational research revaluery)</li> <li>UNICEF (occupational respiratory diseases)</li> <li>PAHO</li> <li>CCUpational health</li> <li>PAHO</li> <li>SAREC</li> </ul> </li></ul>	<ol> <li>Maternal and child health (including <u>child survival</u></li> <li>AID (IIS)</li> <li>Carnegie Corporation of NY</li> <li>Carnegie Corporation (child survival)</li> <li>MORAD</li> <li>MORAD</li> <li>PAHO</li> <li>UNICEF (delivery of immunization, ORT)</li> </ol>	<ul> <li>10. Biomedical research (may form a part of other categories such as TOR, HRP, nutrition, etc.</li> <li>TCMR</li> <li>KEMRI</li> <li>KEMRI</li> <li>MRC (UK)</li> <li>Mellcome Trust</li> </ul>
<ol> <li>Tropical and infectious diseases         <ul> <li>ADBB [schistosomiasis)</li> <li>ADBB [schistosomiasis)</li> <li>ADBB [schistosomiasis)</li> <li>ADD (US)</li> <li>ANREF (malaria, hydatid disease)</li> <li>BOSTID (mosquito vector field studies, malaria, arbourivees, rapid epidemio-logic assessment, ARI)</li> <li>JICA</li> <li>VEMRI (tuberculosis)</li> <li>JICA</li> <li>KEMRI (tuberculosis)</li> <li>AR400</li> <li>RA400</li> <li>Ra400</li></ul></li></ol>	<ul> <li>6. Non-infectious and chronic diseases</li> <li>6. Non-infectious and chronic diseases</li> <li>7. (including lifestyle-related diseases</li> <li>and aging)</li> <li>7. ADAB (glabetes - ASEAN)</li> <li>7. ADAB (cancer research)</li> <li>7. JICA</li> <li>7. PAHO</li> <li>7. PAHO</li> </ul>	<ul> <li>9. Nutrition and food hydiene <ul> <li>ADAB (food habits)</li> <li>Joint Preting of Belgian, Dutch and German Tropical Medicine Societies</li> <li>Ministry for Development Cooperation (Netherlands)</li> <li>MAWO0</li> <li>SAREC</li> </ul> </li> </ul>

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Table 4 also provides an overview of the organizations' major health research interests. Because no information was available on the amount and source of development assistance for medical and health research, we could not indicate the amount of support provided in each category. The data did not indicate where the research is taking place: in fact, much of it is conducted in developed countries and that part carried out in developing countries may not be performed by developing country scientists. This practice does little to provide training and research opportunities for local scientists or to bridge the gap between research and the implementation of research findings.

The data does show that research on Tropical and Infectious Diseases is supported by many, while few organizations fund research into Occupational Health or Traditional Medicine. Biomedical Research appears to receive only limited support, but this may be due to the fact that it can be subsumed under a number of different headings, including diarrheal diseases, population, etc. Although the organizations studied have very different operating styles, policies and objectives, some comments can be made about the operating modes and methods of setting priorities of some major health research funders.

- USAID: Washington-based and field staff of the U.S. 1. Agency for International Development (USAID) work with developing country scientists and ministries to define specific research questions appropriate to the needs, institutions, and resources of each participating country. The parties then design and organize a collaborative research program drawing on the facilities and expertise of developing country, U.S., and international institutions. Some activities, such as research on abortion and on certain contraceptives, are not supported, however, because of U.S. policies.
- 2. PAHO: Individual countries within the PAHO region are encouraged to develop their own national health research policies, priorities, and strategies based on health determinants, health status indicators and identified health problems. PAHO has also identified a number of research areas that would yield critical information for the analysis

of country health situations and that could be used to set regional health research priorities. The process is not functioning well at the moment.

3. SAREC: The Swedish Agency for Research Cooperation with Developing Countries (SAREC) develops bilateral research projects in developing countries on problems of great importance to the country concerned as well as in areas where the results or research affecting their development can be transferred and implemented. This leads to a different operating style than in the foundations and WHO Special Programmes, where multidisciplinary groups of scientists advise on the setting of scientific and technical priorities. According to SAREC's 1985/86 Annual Report, 50% of SAREC's commitments went to international research programs. The largest part of SAREC's budget went to the WHO Special Programmes.

It appears that much of the health research funded and/or implemented by these organizations is disease- or condition- related. While there many be a variety of topic areas or focus within each broad category--the development and diffusion of an innovative intervention strategy, for instance--the research tends to be problem-oriented, segmented, and top-down. Researchers often carry out extractive studies in which community members are subjects. A relatively small number of studies are devoted to examining the root causes of identified ill-health conditions. The input of LDC community members--their attitudes, perceptions and means of relating ill-health conditions they with and resolving the identify as priorities--is seldom recognized. Systematic analysis is rarely used as a basis for formulating more effective strategies and identifying priorities.

### C. Comparative analysis of demand and supply

The IDRC Regional Director's Report on Activities For LARO (1984) states: "Although the Pan American Health Organization has carried out a comparative analysis of available information on health research in 11 countries in the region, the scale on which the analysis was carried out makes it difficult to relate the research activities with health problems." This situation is widespread: no sufficiently sensitive reports or articles exist to correlate the importance or relevance of health problems, the level of investment, and the content and focus of health research in LDCs to allow for a comprehensive analysis of the situation.

The same can be said of this analysis. But the information collected and our experience makes it possible to provide a crude comparative analysis.

First, although health research activities reflect available morbidity and mortality data, they tend to be discipline-bound and focus on only a few of the target population's conditions of ill-health. Few programs or projects follow a holistic approach and fewer still concern themselves with identifying or examining other than biomedical causal factors. This fragmented approach concentrates on one segment of health problems without recognizing that health is a human condition. And even when effective strategies and approaches are developed, their impact is limited. This situation is analogous to the all-too common problem of physicians dealing with diseases rather than people.

Second, changing socio-economic and political conditions in the LDCs are resulting in different morbidity and mortality problems. Increased urbanization and crowding can only serve to exacerbate already poor environmental conditions and the consequent profile of ill-health of communities. The situation will not be improved by simply providing services. The organization and management of these services and interventions, both by the communities themselves and the health care systems that must support community efforts, are priorities. They do not, however, seem to attract much attention.

Third, behavioural and/or lifestyle-related health conditions, particularly sexually-transmitted diseases (notably AIDS), smoking, alcohol and substance abuse are of increasing concern in LDCs. Statistics indicate that both morbidity and mortality rates related to these factors are increasing at an alarming rate. However, few health research resources appear to have been invested in developing strategies to modify behaviour and/or eliminate circumstances facilitating the onset of these conditions. Little research is being carried out on the social and economic pre-conditions for community awareness, acceptance and action, although this is critical to the development and application of appropriate interventions.

The priority identification and setting mechanism appears to strongly determine the focus and content of health research. Many international organizations are structured along disciplinary lines: their secretariat and consultant 'experts' decide the focus and content of health research. Problems are discussed and defined from the expert and/or funding agency perspective. Decisions on strategies to be pursued, research methodologies and indicators of success are usually taken without consulting subject populations. Health problems and research priorities are determined globally or regionally on the basis of disease, discipline or subject.

Research projects therefore tend to follow a top-down approach and are carried out with little input from the intended beneficiaries--even when there is input, it usually takes the form of voluntary labour for the construction of facilities. The limited improvements, if any, in community health would seem to indicate that such approaches are successful only in dealing with technological aspects of diseases or health problems. The gap between technological solutions (vaccines, for example) and their effective and sustained application (the adoption of immunization as part of community behaviour) must be closed. This will require a great deal of research.

# IV. HEALTH SCIENCES DIVISION PROGRAM ASSESSMENT

This section analyzes the evolution of the HSD program, particularly its direction, content and composition as well as the resources--capital and human--at its disposal. A comparison of this information with that in the previous section will allow us to identify the program's strengths and deficiencies.

# A. Program analysis

### 1. Funding patterns

### (a) Regular program appropriations

Table 5 provides a breakdown by fiscal year of HSD regular program appropriations. From this table, it is possible to see how the HSD programs and the emphasis placed thereon have evolved. For information purposes, an inflation-adjusted table of regular program appropriations has also been provided (see Table 6). This table illustrates that although there appears, in nominal dollars, to have been a considerable increase in support to certain programs, in "real" dollars support has remained relatively flat, or in some instances has actually tapered off.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	0861	1991	<b>1982</b>	861 881	1981	1985	1986	1987 (Est)
Fertil ity Regulation Nethods/ Maternal & Orild Health	338	361	204	606	3,000	1,078	756	1, 901	1,183	1, 121	2,586	1,877	3,810	2,986	3,529	3,090	2,790
Family Planning Action Research	<b>5</b> 2	240	425	391	468	14	•	ł	1	ł	ł	ł	!	1	I	ł	ł
Demography & Population (Note 1)	156	ରାରେ	1,055	8	490	45	ł	ł		ł	ł	ł	ł	;	ł	I	ł
Rural Health Care Delivery	47	<b>60</b> 4	1,050	<b>8</b> 8	310	<b>3</b> 66	<b>6</b> 88	351	39	<b>289</b>	795	918	ł	. 1	ļ	ł	1
Ervironmental Health & Disease Prevention			280	498	728	1,938	43	ß	1	ł	ł	ł	1	:	l		1
Tropical Disease Research/ Communicable & Non-Infectious Diseases							1,049	745	840	1,970	1,889	1,883	2,338	2,051	2,198	2,475	3,385
(Rural) Water Supply & Sanitation							1,087	1,043	874	20	235	630	1, 245	1,773	1,531	1,590	3,000
Occupational & Environmental Health											206	433	88	726	333	743	004
Health Services Research														471	1,149	1,875	1,856
Special Initiatives																648	501
Total Regular Programs	g	1, 12	3,404	3,661	<b>4</b> , 996	4,070	3, 224	4,045	হ, য	3, 739	6,010	5, 801	8, 366	8,006	8, 740	10, 421	12,002
Note 1: Transferred to Social Scie	ances Di	vision	effect 'n	/e 1976	Ш.												

TABLE 5 HS APPROFR JATRONS (0005 om itted) Page 41

					•		itted)										
	1/61	1972	1973	1974	1975	1976	1701	1978	1979	0861	1981	2861	1983	1981	1985	1986	987 Est)
fertility Regulation Nethods/ Maternal & Onild Health	338	34	527	727	2,166	724	470	1,085	619	532	1,091	715	1, 372	1,031	1,150	196	842
Family Planning Action Research	<b>6</b> 7	229	377	313	338	6	ł	ł	;	1		1	ļ	1	1	1	1
Demography & Ropulation	156	588	336	072	354	8	1	ł	1	1 -	1	•	1	1	;	•	•
Rural Health Care Delivery	47	576	932	0/1	224	668	553	200	206	280	335	320	I	I	1		<b> </b>
Ervirronmental Health & Disease Prevention			248	398	526	1,302	27	n	ł	ł	ł	1	;		ł		1
Tropical Disease Research/ Communicable & Non-Infectious Diseases							652	425	439	335	<i>161</i>	717	842	802	716	774	1,022
(Rural) Water Supply & Sanitation							676	262	457	28	66	263	448	612	499	498	927
Occupational & Environmental Health											214	165	347	251	109	233	121
Health Services Research														163	375	587	560
Special Initiatives																Ŕ	151
Total Regular Programs	l 88	1,737	3,020	2, 928	3,608	2, 733	2,378	2,308	1, 721	1,775	2, 536	2,210	3,009	2,765	2,849	3, 262	3,623
Note 1: Actual appropriations fig	jures ha e perioc	ave beer 1 1 971-1	n adjust 1987.	ted by a	n inflat	tion fac	tor as r	neasured	l by chi	anges i	n the 0	ons unler	Price	Index a	s repor	ted by	Page 4

TABLE 6 INFLATION ADJUSTED HS APPROPRIATIONS (Note 1)

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### (b) Research institutions

Table 7 provides a breakdown by fiscal year of HSD appropriations\*, the number of research groups funded, the average grant per group, the percentage share of the appropriations, and each type of research group's percentage of the total research groups funded.

For purposes of this analysis, we have divided the research groups (NGOs): into six types: I DRC ; non-governmental organizations non-governmental organizations (INGOs); universities; international organizations (IGOs); and nat ional international governmental governments. NGOs are non-profit, development-oriented agencies staffed principally by developing country nationals. INGOs are non-profit, development-oriented groups working in several developing countries, but headquartered in a developed country. Their research teams can include developing country nationals and/or expatriates. IGOs are other related to the United Nations or international groups government-sponsored organizations or research centres. The national government category can include research groups within ministries or those based in agencies and institutes reporting directly to a ministry. IDRC is listed as separate category since it approved three projects to itself: in 1975 and 1977 for consultancies, and in 1980 to underwrite the cost of a major workshop on water supply and sanitation in Africa.

From 1971 to the end of the 1986 fiscal year, HSD provided grants to 617 research groups, i.e. institutions responsible for performing the project, whether or not they were the recipients of the funds. Of these, approximately 13% received more than one grant. The average value of a HSD grant to a research group was CAD \$130,940. Additional information on the average size of HSD grants is provided in Table 8.

As per the Centre's PINS database, which shows the 1971-1976 HS Demography and Population appropriations as belonging to the Social Sciences Division. For this reason, these Demography and Population projects have been excluded from this analysis.

### STRATEGIC PLAN - HEALTH SCIENCES DIVISION

TRBLE 7

### APPROPRIATIONS/RESEARCH INSTITUTIONS SUPPORTED HEALTH SCIENCES DIVISION - FISCAL YEARS 1971 - 1986\*

### TYPE OF INSTITUTION

1971 and 1972 Moreor of Research Institutions Supported Mumber of Research Institution (3) 2 Frant/Ictal Grant by Institution Type 2 Institutions/Ictal Institutions 3 Formt/Ictal Grant by Institution 1973 and 1974 Moverage Grant/Institutions 1975 and 1976 Mumber of Research Institutions 1976 And 1976 Mumber of Research Institutions 1977 and 1976 Moverage Grant/Institutions 1977 and 1976 Moverage Grant/Institutions 1977 and 1976 Moverage Grant/Institutions 1977 and 1976 Moverage Grant/Institutions 1978 And 1976 Moverage Grant/Institutions 1977 and 1976 Moverage Grant/Institutions 1978 And 1970 1978 And 1970 1979 and 1970 1979 and 1980 Moverage Grant/Institution (4) 1981 and 1980 Moverage Grant/Institution (5) 2 Grant/Institution (5) 3 Gran	FISCAL YEARS++	IDRC	NGC	INGO	UNIVERSITY	INT'L GOU'T	LOCAL GOU'T	TOTAL
Appropriation (\$)       -       -       152,000       428,922       461,740       807,334       1,849,956         Burder of Research Institutions Supported       -       -       2       3       2       9       15         Burder of Research Institution (\$)       -       -       76,000       142,974       220,970       100,917       122,333         1       Semitivitions/lotal Fastitutions       -       -       8.2       22.2       25       43.6       100         1       Jastitutions/lotal Fastitutions       -       -       1.041,385       770,000       915,640       163,900       1,176,797       4,057,722         Muber of Research Institutions Supported       -       2       2       5       13       176,873       1,880,174       8.07,722         Muber of Research Institutions Supported       -       8.7       13       35.1       13       26.1       100         I fastitutions/lotal Institutions       -       8.7       13       35.1       13       26.1       100         I fastitutions/lotal Institution (\$)       48,000       847,600       3,359,084       1,541,552       1,167,673       1,880,144       8,984,055       5       55       55       55	1971 and 1972							
Number of Research Institutions Supported         -	Appropriation (\$)	•	-	152.000	428.922	461 740	807 334	1 849 996
Ruerage Erant/Institution (s)         -         -         76,000         142,974         230,870         100,917         122,333           3 Frant/Ictal Frant by Institutions         -         -         8.2         23.2         25         43.6         100           9 Institutions/Ictal Institutions         -         -         13.3         20         13.3         53.3         100           1973 and 1974         Repear A 10,000         915,640         163,900         1,176,737         4,067,722           Ruerage Frant/Institution (s)         -         1,041,385         770,000         915,640         163,900         1,176,737         4,067,722           Ruerage Frant/Institution (s)         -         520,693         256,667         101,738         54,633         196,133         176,857           2 Frant/Ictal Frant by Institution Type         -         25,6         18.9         22.5         4         26.9         100           1975 and 1976         48,000         84,000         84,000         1,541,552         1,167,673         1,880,144         8,844,059           Ruerage Frant/Institution (s)         48,000         219,000         1,579,542         55,056         233,553         125,343         160,801           1977 and	Mumber of Research Institutions Supported	•	•	2	3	7	901,001 9	15
2 Grant/Tetal Grant by Institution Type       - <td>Average Grant/Institution (\$)</td> <td>•</td> <td>•</td> <td>76.000</td> <td>142.974</td> <td>230.870</td> <td>100.917</td> <td>123 333</td>	Average Grant/Institution (\$)	•	•	76.000	142.974	230.870	100.917	123 333
Institutions/Total Institutions       -       -       13.3       20       13.3       53.3       100         1973 and 1974       Appropriation (4)       -       -       1,041,385       770,000       915,640       163,900       1,176,737       4,067,722         Mumber of Research Institutions Supported       -       2       3       9       3       6       23         Average Grant/Institution (4)       -       520,693       256,667       101,738       54,633       196,133       176,857         I Institutions/Iotal Institutions       -       8,7       13       39,1       13       26,1       100         I Institutions/Iotal Institutions       -       8,7       13       39,1       13       26,1       100         I Formation (4)       48,000       847,600       3,359,084       1,511,552       1,167,673       1,880,144       8,041,059         Mumber of Research Institutions Supported       1       4       2       28       5       15       55         I Senditions/Iotal Institutions       10,5       9,6       38       17,4       13.2       21,3       100         I Formation (5)       65,100       45,5000       2,496,000       1,682,743       5	I Grant/Total Grant by Institution Type	•	•	8.2	23.2	25	43.6	100
1973 and 1974       Appropriation (\$)       -       1,841,385       770,000       915,640       163,900       1,176,737       4,067,722         Mumber of Research Institutions Supported       -       2       3       9       3       6       23         Average Grant/Institution (\$)       -       520,693       256,667       101,738       56,633       196,133       176,857         2 Grant/Ical Grant by Institutions       -       8.7       13       39.1       13       26.1       100         1975 and 1976       Appropriation (\$)       48,000       647,600       3,359,004       1,517,552       1,167,673       1,080,144       8,044,059         Mumber of Research Institutions Supported       1       4       2       28       5       15       55         Reverage Grant/Institution (\$)       48,000       211,900       1,679,542       55,056       233,535       125,343       160,001       1       167,723       100       1       13.2       21.3       100       1       100,81       167,9542       55,056       233,535       125,343       160,001       1       167,723       1,000,172       1       1.8       1.8       2.4       22       6       1       1.8       1.8<	2 Institutions/Total Institutions	•	•	13.3	20	13.3	53.3	100
Appropriation (%)       -       1,041,385       770,000       915,640       163,900       1,176,797       4,067,722         Mumber of Research Institutions Supported       -       2       3       9       3       6       23         Average Grant/Institution (%)       -       520,693       256,667       101,738       54,633       196,133       176,857         I fastitutions/lotal Institutions       -       8.7       13       39.1       13       26.1       100         1975       and 1976       Appropriation (%)       48,000       847,600       3,359,084       1,511,558       1,167,673       1,880,144       8,984,059         Mumber of Research Institutions Supported       1       4       2       28       5       15       55         Regroprizition (%)       48,000       211,900       1,679,542       55,056       233,535       125,343       160,001         I fastitutions/lotal Institutions       1.8       7.3       3.6       50.9       9.1       27.3       1000         1977 and 1576       Appropriation (%)       65,100       435,000       2,496,000       1,682,743       513,488       1,904,390       7,180,721         Mumber of Research Institutions       1.5	1973 and 1974							
Humber of Research Institutions Supported       -       2       3       9       3       6       23         Rerage Grant/Institution (\$)       -       520,693       256,667       101,738       54,633       196,133       176,617       100,144       8,28,9       100         Institutions/Intal Frant by Institutions       -       8.7       13       39,1       13       26.1       100         1975       Appropriation (\$)       48,000       B47,600       3,359,084       1,541,556       1,167,673       1,880,144       8,944,059         Number of Research Institutions Supported       1       4       2       28       5       15       55         Gerant/Institution (\$)       48,000       D47,600       3,359,084       1,541,556       1,167,673       1,880,144       8,944,059         Number of Research Institutions Supported       1       4       2       28       5       15       55         Starmat/Institutions (\$)       48,000       D47,600       3,359,084       1,541,556       1,167,673       1,880,144       8,944,305       7,180,821         Institutions/Intal Grant by Institution Type       0.5       9.6       38       17.4       13.2       21.3       100 <th< td=""><td>Representation (\$)</td><td>•</td><td>1.041.385</td><td><b>77</b>0 000</td><td>915 640</td><td>163 900</td><td>1 176 797</td><td>4 867 777</td></th<>	Representation (\$)	•	1.041.385	<b>77</b> 0 000	915 640	163 900	1 176 797	4 867 777
Average Grant/Institution (%)       -       520,693       256,667       101,738       54,633       196,133       176,857         I fernt/Intal Grant by Institution Type       -       25.6       18.9       22.5       4       28.9       100         I Institutions/Intal Institutions       -       8.7       13       39.1       13       26.1       100         IFF       Appropriation (%)       48,000       B47,600       3,359,084       1,541,558       1,167,673       1,880,144       8,844,059         Number of Research Institution Supported       1       4       2       28       5       15       55         Repropriation (%)       48,000       1,679,542       55,056       233,553       125,343       160,801         I Fernt/Institution Supported       1       8       5       28       4       22       6         Ropropriation (%)       69,100       435,000       2,496,000       1,682,743       513,468       1,964,390       7,180,721         Mowber of Research Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         I Institutions/Intal Institutions       1.5       11.8       7.4       11.2       5.9       32.1 <td>Humber of Research Institutions Supported</td> <td>-</td> <td>2</td> <td>3</td> <td>9</td> <td>100,700</td> <td>،د،وە،،و، ۴</td> <td>1,001,122</td>	Humber of Research Institutions Supported	-	2	3	9	100,700	،د،وە،،و، ۴	1,001,122
2 Grant/Iotal Frant by Institution Type       -       25.6       18.9       22.5       4       28.9       100         2 Institutions/Iotal Institutions       -       8.7       13       39.1       13       26.1       100         1975       Appropriation (\$)       48.000       847.600       3.359.084       1.541.552       1.167.673       1.880.144       8.944.059         Mumber of Research Institutions Supported       1       4       2       28       5       15       55         Rverage Grant/Institution (\$)       48.000       211.900       1.679.542       55.055       233.535       125.343       160.801         1 Institutions/Iotal Institutions       1.8       7.3       3.6       50.9       9.1       27.3       100         1977 and 1978       Appropriation (\$)       65,100       435,000       2.496,000       1.682.743       513.488       1.904.390       7.180.721         Rverage Grant/Institutions (\$)       65,100       435.000       2.496.000       1.682.743       513.488       1.904.390       7.180.721         Rverage Grant/Institutions (\$)       69,100       54.375       499.200       60.0986       128.374       7.2       27.6       100       1.5       11.8       7.4	Average Grant/Institution (\$)	-	520.693	256 667	101 73R	54 677	196 177	176 857
I Institutions/Total Institutions       -       8.7       13       39.1       13       26.1       100         1975 and 1976       Appropriation (8)       48,000       847,600       3,359,084       1,541,558       1,167,673       1,880,144       8,644,059         Number of Research Institutions Supported       1       4       2       28       5       15       55         Regrage Frant/Institution (8)       48,000       1,670       1,541,558       1,167,673       1,880,144       8,644,059         Mumber of Research Institution Type       1       4       2       28       5       15       55         Repropriation (8)       48,000       1,670,542       55,055       233,536       125,343       160,801         Institutions/Total Institutions       1.8       7.3       3.6       50.9       9.1       27.3       100         1977 and 1978       Repropriation (8)       65,100       435,000       2,496,000       1,682,743       513,488       1,964,390       7,180,721         Number of Research Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         Ip79 and 1980       Nperopriation (8)       108,100       727,900       1,089,862	I Grant/Total Grant by Institution Type	•	25.6	18.9	77 5	4	<b>7</b> R Q	100
1975 and 1976         Appropriation (\$)       48,000       B47,600       3,359,084       1,541,552       1,167,673       1,880,144       8,844,059         Munber of Research Institutions Supported       1       4       2       28       5       15       55         Average Grant/Institution (\$)       48,000       211,900       1,679,542       55,055       233,553       125,343       160,801         I Institutions/Iotal Institutions       1.8       7.3       3.6       50.9       9.1       27.3       100         1977 and 1976       Repropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,964,390       7,180,721         Munber of Research Institution Supported       1       8       5       29       4       22       68         Average Grant/Institution (\$)       69,100       54,375       499,200       60,098       128,372       90,200       105,599         I Institutions/Iotal Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         1973 and 1980       Morage Grant/Institution (\$)       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327	Institutions/Total Institutions	•	8.7	13	39.1	13	26.1	100
Rppropriation (\$)       48,000       P47,600       3,359,084       1,541,552       1,167,673       1,880,144       8,844,059         Mumber of Research Institutions Supported       1       4       2       28       5       15       55         Reverage Frant/Institution (\$)       48,005       211,900       1,679,542       55,056       233,535       125,343       160,801         I Institutions/Iotal Institutions       1.6       7.3       3.6       50.9       9.1       27.3       100         1977 and 1978       Rppropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,964,390       7,180,721         Mumber of Research Institutions Supported       1       8       5       28       4       22       68         Reverage Grant/Institution (\$)       69,100       54,375       499,200       60,095       128,372       90,200       105,599         I Institutions/Total Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         Reverage Grant/Institution Supported       1       9       6       32       5       21       74         Reverage Grant/Institutions       1.5       11.8       7.4 <td< td=""><td>1975 and 1976</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	1975 and 1976							
Number of Research Institutions Supported       1       4       2       28       5       15       55         Reverage Grant/Institution (\$)       48,005       211,900       1,679,542       55,056       233,535       125,343       160,801         I Grant/Institution (\$)       48,005       211,900       1,679,542       55,056       233,535       125,343       160,801         I I Grant/Institutions/Intal Grant by Institutions       1.8       7.3       3.6       50.9       9.1       27.3       100         1977 and 1976       Rppropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,904,390       7,180,721         Number of Research Institutions       Supported       1       8       5       28       4       22       68         Average Grant/Institution (\$)       69,100       54,375       499,200       60,095       128,372       90,200       105,599         I Institutions/Intal Grant by Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         I Statitutions/Intal Institutions       1.08,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Mumber of Resear	Repropriation (\$)	48.000	<b>R47 60</b> 0	3 359 084	1 541 558	1 167 673	1 990 144	0 044 050
Average Grant/Institution (%)         48,005         211,900         1,679,542         55,056         233,535         125,343         160,801           I formt/Iotal Grant by Institution Type         0.5         9.6         38         17.4         13.2         21.3         100           I Institutions/Iotal Institutions         1.8         7.3         3.6         50.9         9.1         27.3         100           1977 and 1976         Appropriation (%)         69,100         435,000         2,496,000         1,682,743         513,488         1,904,390         7,180,721           Mumber of Research Institutions Supported         1         8         5         28         4         22         68           Reverage Grant/Institution (%)         69,100         54,375         499,200         60,096         128,372         90,200         105,599           I Grant/Iotal Grant by Institutions         1.5         11.8         7.4         11.2         5.9         32.4         100           1979 and 1980         Research Institutions Supported         1         9         6         32         5         21         74           Mumber of Research Institutions Supported         1         9         6         32         5         21	Number of Research Institutions Supported	1	4	<b>0,0</b> 07,001	78	1,101,013 E	15	0,011,000
I Grant/Total Grant by Institution Type       0.5       9.6       38       17.4       13.2       21.3       100         I Institutions/Total Institutions       1.8       7.3       3.6       50.9       9.1       27.3       100         1977 and 1978       Rppropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,964,390       7,180,721         Number of Research Institutions Supported       1       8       5       28       4       22       68         Average Grant/Institution (\$)       69,100       54,375       499,200       60,098       128,372       90,200       105,599         I Institutions/Iotal Grant by Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         I Institutions/Iotal Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         1979 and 1980       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Bographiation (\$)       1.4       5.3       14       27.6	Average Grant/Institution (\$)	48.005	211,900	1.679.542	55 056	777 575	125 242	160 R01
Institutions/lotal Institutions       1.6       7.3       3.6       50.9       9.1       27.3       100         1977 and 1978       Appropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,984,390       7,180,721         Number of Research Institutions Supported       1       8       5       28       4       22       68         Average Grant/Institution (\$)       69,100       54,375       499,200       60,096       128,372       90,200       105,599         Institutions/Iotal Grant by Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         1979 and 1980       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Suerage Grant/Institution (\$)       108,100       80,878       181,644       67,063       276,523       110,961       105,207         I Grant/Iotal Grant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       100         1981 and 1982       -       1,132,040       3,456,170	# Grant/Total Grant by Institution Type	0.5	9.6	301.2,012 30	17 4	12 7	20,010	100,007
1977 and 1978       Appropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,984,390       7,180,721         Mumber of Research Institutions Supported       1       8       5       28       4       22       68         Ruerage Grant/Institution (\$)       69,100       54,375       499,200       60,096       128,372       90,200       105,599         2 Grant/Iotal Grant by Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         2 Institutions/Iotal Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         1979 and 1980       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Ruerage Grant/Institution (\$)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         2 Grant/Iotal Grant by Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         1981 and 1982       -       1.32,040       3,456,170	Institutions/Total Institutions	1.8	7.3	3.6	50.9	9.1	27.3	100
Appropriation (\$)       69,100       435,000       2,496,000       1,682,743       513,488       1,984,390       7,180,721         Number of Research Institutions Supported       1       8       5       28       4       22       68         Average Grant/Institution (\$)       69,100       54,375       499,200       60,098       128,372       90,200       105,599         Institutions/Iotal Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         1979 and 1980       1.5       11.8       7.4       41.2       5.9       32.4       100         1979 and 1980       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Regrage Grant/Institution (\$)       108,100       80,678       181,644       67,083       276,523       110,961       105,207         Institutions/Iotal Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         1981 and 1982       -       1,132,040       3,456,170       2,974,870       830,949       3,	1977 and 1978							
Number of Research Institutions Supported       1       8       5       28       4       22       68         Rurage Grant/Institution (\$)       69,100       54,375       499,200       60,098       128,372       90,200       105,599         Institutions/Iotal Grant by Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         Institutions/Iotal Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         1979 and 1980       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Swerage Grant/Institution (\$)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         I Grant / Iotal Grant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       100         Istitutions/Iotal Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         Istitutions/Iotal Institutions       -       1,132,040       3,456,170       2,974,870	Appropriation (\$)	69,100	435,000	2,496,000	1.682.743	513 488	1 984 396	7 180 771
Ruerage Grant/Institution (\$)       69,100       54,375       499,200       60,098       128,372       90,200       105,599         % Grant/Iotal Grant by Institution Type       1       6.1       34.8       23.4       7.2       27.6       100         % Frant/Iotal Grant by Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         1979 and 1980       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Suerage Grant/Institution (\$)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         % Grant/Iotal Grant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       100         % Bopropriation (\$)       0.14       12.2       8.1       43.2       6.8       28.4       100         % Werage Grant/Institutions       -       1,132,040       3,456,170       2,974,870       \$30,949       3,314,905       11,708,934         % Werage Grant/Institutions       -       113,204       432,021       99,162	Humber of Research Institutions Supported	1	8	5	28	4	77	68
Image: Second	Average Grant/Institution (\$)	69,100	54.375	499.200	60.098	128 372	90 200	105 599
Institutions/lotal Institutions       1.5       11.8       7.4       41.2       5.9       32.4       100         Hoppropriation (\$)       108,100       727,500       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Hunber of Research Institutions Supported       1       9       6       32       5       21       74         Swerage Grant/Institution (\$)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         Institutions/Total Grant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       180         ISBI and 1982       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Hunber of Research Institutions Supported       -       10       8       30       3       29       60         Rverage Grant/Institution (\$)       -       113,204       432,021       99,162       276,963       114,307       146,362         I Grant/Iotal Grant by Institution Type       -       9,7       29,5       25,4       7,1       28,3       100         I Institutions/Iotal Institutions       -       12,5       10       37,5	I Grant/Iotal Grant by Institution Type	1	6.1	34.8	23.4	7 7	27 6	100,000
1979 and 1980         Rppropriation (\$)       108,100       727,900       1,089,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Regage Grant/Institution (\$)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         I Grant/Iotal Grant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       100         I Institutions/Iotal Institutions       1.4       1.2       8.1       43.2       6.8       28.4       100         1981 and 1982       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Rumber of Research Institutions Supported       -       10       8       30       3       29       80         Reverage Grant/Institution (\$)       -       113,204       432,021       99,162       276,963       114,307       146,362         I Grant/Iotal Grant by Institution Type       -       9,7       29,5       25.4       7.1       28.3       100         I Institutions/Iotal Institutions       -       12,5 </td <td># Institutions/Total Institutions</td> <td>1.5</td> <td>11.8</td> <td>7.4</td> <td>41.2</td> <td>5.9</td> <td>32.4</td> <td>100</td>	# Institutions/Total Institutions	1.5	11.8	7.4	41.2	5.9	32.4	100
Bopropriation (\$)       108,100       727,508       1,099,862       2,146,670       1,382,615       2,330,180       7,785,327         Number of Research Institutions Supported       1       9       6       32       5       21       74         Bwerage Erant/Institution (\$)       108,100       80,678       181,644       67,083       276,523       110,961       105,207         I Grant/Iotal Erant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       100         I Institutions/Iotal Institutions       1.4       1.2       8.1       43.2       6.8       28.4       100         Isstitutions/Iotal Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         Isstitutions/Iotal Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         Isstitutions/Iotal Institutions       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Number of Research Institutions Supported       -       10       8       30       3       29       80         Rverage Erant/Institution (\$)       -       113,204       432,021       99,162	1979 and 1980							
Number of Research Institutions Supported       1       9       6       32       5       21       74         Number of Research Institution (%)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         I Grant/Institution (%)       108,100       80,878       181,644       67,083       276,523       110,961       105,207         I Grant/Institution (%)       1.4       3.3       14       27.6       17.8       29.9       160         I Institutions/Iotal Institutions       1.4       3.3       14       27.6       17.8       29.9       160         Isstitutions/Iotal Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         Isstitutions/Iotal Institutions       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Mumber of Research Institutions Supported       -       10       8       30       3       29       80         Rverage Erant/Institution (%)       -       113,204       432,021       99,162       276,983       114,307       146,362         I Institutions/Iotal Erant by Institution       -       9.7       29.5       25.4	Repropriation (\$)	108,100	727.908	1.089.862	2.146.670	1.382.615	2.330.180	7 785 377
Buerage Grant/Institution (%)         108,100         80,878         181,644         67,083         276,523         110,961         105,207           I Grant/Total Grant by Institution Type         1.4         9.3         14         27.6         17.8         29.9         100           I Institutions/Total Institutions         1.4         9.3         14         27.6         17.8         29.9         100           Isstitutions/Total Institutions         1.4         12.2         8.1         43.2         6.8         28.4         100           1981 and 1982         -         1,132,040         3,456,170         2,974,870         830,949         3,314,905         11,708,934           Mumber of Research Institutions Supported         -         10         8         30         3         29         80           Rurage Grant/Institution (%)         -         113,204         432,021         99,162         276,983         114,307         146,362           I Serant/Total Grant by Institution Type         -         9.7         29.5         25.4         7.1         28.3         100           I Institutions/Total Institutions         -         12.5         10         37.5         3.8         36.3         100	Number of Research Institutions Supported	. 1	9	6	32	5	21	74
Imat/Total Grant by Institution Type       1.4       9.3       14       27.6       17.8       29.9       180         Institutions/Total Institutions       1.4       9.3       14       27.6       17.8       29.9       180         Institutions/Total Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         1981 and 1982       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Mumber of Research Institutions Supported       -       10       8       30       3       29       80         Recarge Grant/Institution (%)       -       113,204       432,021       99,162       276,983       114,307       146,362         Institutions/Total Grant by Institution Type       -       9.7       29.5       25.4       7.1       28.3       100         Institutions/Total Institutions       -       12.5       10       37.5       3.8       36.3       100	Ruerage Grant/Institution (\$)	108,100	80.878	181.644	67.083	276.523	110 961	105 207
Institutions/Total Institutions       1.4       12.2       8.1       43.2       6.8       28.4       100         1981 and 1982       Appropriation (\$)       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Number of Research Institutions Supported       -       10       8       30       3       29       80         Rverage Grant/Institution (\$)       -       113,204       432,021       99,162       276,983       114,307       146,362         I Serant/Iotal Grant by Institution Type       -       9.7       29.5       25.4       7.1       28.3       100         I Institutions/Total Institutions       -       12.5       10       37.5       3.8       36.3       100	I Grant/Istal Grant by Institution Type	1.4	9.3	14	27.6	17.8	29.9	180
1981 and 1982         Appropriation (\$)       -       1,132,040       3,456,170       2,974,870       830,949       3,314,905       11,708,934         Number of Research Institutions Supported       -       10       8       30       3       29       80         Rverage Grant/Institution (\$)       -       113,204       432,021       99,162       276,983       114,307       146,362         2 Grant/Iotal Grant by Institution Type       -       9.7       29.5       25.4       7.1       28.3       100         2 Institutions/Iotal Institutions       -       12.5       10       37.5       3.8       36.3       100	Institutions/Total Institutions	1.4	12.2	8.1	43.2	6.8	28.4	100
Appropriation (\$)         -         1,132,040         3,456,170         2,974,870         830,949         3,314,905         11,708,934           Number of Research Institutions Supported         -         10         8         30         3         29         80           Rverage Grant/Institution (\$)         -         113,204         432,021         99,162         276,983         114,307         146,362           X Grant/Iotal Grant by Institutions         -         9.7         29.5         25.4         7.1         28.3         100           X Institutions/Iotal Institutions         -         12.5         10         37.5         3.8         36.3         100	1981 and 1982							
Number of Research Institutions Supported         -         10         8         30         3         29         80           Rverage Grant/Institution (%)         -         113,204         432,021         99,162         276,983         114,307         146,362           X Grant/Iotal Grant by Institution Type         -         9.7         29.5         25.4         7.1         28.3         100           X Institutions/Total Institutions         -         12.5         10         37.5         3.8         36.3         100	Appropriation (\$)	•	1,132.040	3,456,170	2.974.870	830.949	3.314.905	11.708 934
Rverage Grant/Institution (%)         -         113,204         432,021         99,162         276,983         114,307         146,362           % Grant/Institution fype         -         9.7         29.5         25.4         7.1         28.3         100           % Institutions/Total Institutions         -         12.5         10         37.5         3.8         36.3         100	Number of Research Institutions Supported	-	10	ß	30	3	-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	AU
Image: Second	Rverage Grant/Institution (\$)	-	113.204	432.021	99,162	276.983	114.307	146 362
X Institutions/Total Institutions - 12.5 10 37.5 3.8 36.3 100	2 Grant/Total Grant by Institution Type	•	9.7	29.5	25.4	7.1	28.2	100
	X Institutions/Total Institutions	•	12.5	10	37.5	3.8	36.3	100

mefor purposes of this analysis we have broken down the reported.

information into 2 (fiscal) year blocks of time. For example the 1971-72, which run

from April 1, 1971 to March 31, 1972 and from April 1, 1972 to March 31, 1973 respectively.

# STRATEGIC PLAN - HEALTH SCIENCES DIVISION

TABLE 7

# APPROPRIATIONS/RESEARCH INSTITUTIONS SUPPORTED HEALTH SCIENCES OLVISION - FISCAL YEARS 1971 - 1986\*

# TYPE OF INSTITUTION

FISCAL YEARS**	IORC	NGO	INGO	UNIVERSITY	INT'L GOU'T	LOCAL GOUT	TOTAL
1971 and 1972							
1983 and 1984							
Appropriation (\$)	-	<b>2,9</b> 59, <b>9</b> 90	<b>626 . 84</b> 0	6.341.338	1,169,270	5 705 577	16 803 015
Number of Research Institutions Supported	-	18	5	55	7	ς) Σ	125
Average Grant/Institution (\$)	-	164,444	125.368	115.297	167 039	114 112	174 457
# Grant/Iotal Grant by Institution Type	•	17.6	3.7	37.7	7	24	100,131
Institutions/lotal Institutions	•	13.3	3.7	40.7	5.2	37	100
1985 and 1986							
Appropriation (\$)	-	2.677.374	1,298,725	9 184 336	<b>7 NE4 N</b> 27	7 225 475	77 E46 600
Number of Research Institutions Supported	-	13	9	97	2,001,001	1,000,100	42,012,202
fiverage Grant/Institution (\$)	-	205 952	144 303	99 920	202 474	07 120 ACC	121
I Grant/Iotal Grant by Institution Tupe	•	11.9	ς ρ	40 7	200,101 0 1	107,100 70 C	135,029
# Institutions/lotal Institutions	-	7.8	5,4	55.1	4.2	<b>3</b> 2.5 27.5	100
TOTAL							
Appropriation (\$)	225,200	9.821.289	13.248.681	25 216 079	7 743 672	74 524 767	00 700 207
Number of Research Institutions Supported	. 3	64	46	20,210,015	20	107	00,107,000
Average Grant/Institution (\$)	75.067	153,458	331 217	Q1 072	216 102	124 642	Di ( 170 040
I Grant/Total Grant by Institution Type	0.3	12.2	16.4	Z1 2	201,01	127,072 20 4	100,990
# Institutions/Total Institutions	0.5	10.4	6.5	44.9	5.8	т. 30. т З1. 9	100

\*Includes pending appropriations budgeted to March 31, 1987

		AVE	RAGE SIZE (0	OF HS 6	skant (No ted)	te 1)					
	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987 (Est)
fotal Program Appropriations (Note 2)	3, 824	4,045	3, 291	3, 739	6, 043	6, 120	9, 024	8, 024	10, 111	11, 405	13, 152
Number of Projects	35	27	26	38	37	29	62	58	60	72	83
Average Grant Size	109.3	149.8	126.6	98.4	163.3	211.0	145.5	138.3	168.5	158.	4 158.5
tote 1: For comparative purr	oses. we have	e onlvlo	oked at t	he perio	d heainn	ina with	197 the	7 fiscal	T	he mroie	rts in the

in the Demography and Population program from 1971-1976 (subsequently transferred to SS) distort the ratio and make comparisons difficult.

Note 2: Includes regular programs and COOP.

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Figure 4 summarizes total grants to recipients by category and compares allocations. One major trend is a drop in appropriations to INGOS. This reflects a decision by the Division's management to decrease the number and scale of grants for groups such as the Population Council which are based in developed countries.

National government-based research groups and universities jostled for position during these same periods (Figure 5). During the 1983/86 period, university groups received the largest proportion of grants (39.3%), perhaps indicating the improved capacity of developing country academic institutions to propose and undertake good, relevant research in the health field. This could also indicate a change of emphasis within the Division toward recognized health research institutions, HSD staff's greater ability to contact the researchers, and the researchers' willingness to work with IDRC.

National government-based groups received 33.3% of total appropriations in 1983/86; NGOs received 12.5%; IGOs received 8.2% and INGOs, 6.7%.

The number of research groups supported in each category follows similar trends (Figure 4). University and national government-based research groups ranked first and second respectively in all study periods. The number of NGO research groups increased significantly, from 6 in 1971/76 to 32 in 1983/86.

Comparing the geographical share of appropriations also reveals some interesting trends. For example, although more universities in South and Southeast Asia received grants than in any other region, universities' share of grants in this region decreased slightly over the entire period (Figure 6). The same is true in Africa and the Middle East. Only in Latin America did appropriations to university research groups grow consistently. The reverse is true for appropriations to national government research groups. In Latin America, their share of appropriations decreased during the period, while it increased in South and Southeast Asia. The share of allocations to government research groups in Africa and the Middle East dropped slightly in 1977/82 but returned to its former share--about 35%--in 1983/86.

For the 1971/76 period, 80% of appropriations directed to NGO research groups went to Latin America; the remainder went to South and Southeast Asia. This was reversed in 1977/82 and 1983/86 when NGO-based researchers in South and Southeast Asia received the largest proportion of appropriations. The most significant growth in percentage share of appropriations occured in Africa and the Middle East: by 1983/86, this region accounted for 21.9% of total appropriations to NGO-based research groups.

This review of appropriations by research institution shows that the mixture of institutions supported varies from region to region. A more detailed review of appropriations by type of research institution in each region is available from the HSD.

# (c) Recipient institutions

A review of the number and amount of grants by recipient institution also provides some useful information. As can be seen from Table 9, a limited number of recipient institutions (17 in total) account for 27% of the total number of grants made since the inception of the Division and 40.0% of the total regular program appropriations. The largest number of these institutions (five) are in Southeast Asia and Latin America. This probably reflects several factors:

- The relative emphasis placed on these regions in the past by HSD.
- HSD staffing patterns, as relate to regional office positions.
- The relative high quality of institutions in these regions.

This analysis also illustrates that there has been a concentration of support for a relatively limited number of institutions, even though the HSD has never explicitly adopted an institution strengthening policy targeting specific institutions for coordinated support. In

fact, an interesting dichotomy appears to exist. As per the detailed listing of recipient institutions supported by HSD (copy available in the division), a very large number of institutions have received only one grant, whereas the 17 institutions identified in Table 9 have each received five or more grants. The emphasis on these 17 institutions appears to be due to the relative degree of sophistication of these institutions and other incidental factors, such as proximity to IDRC regional offices, whereas the scatter among many other institutions can attributed, at least be in part, to the division's overall responsiveness and a lack of coordinated approach to institution support.

### (d) Appropriations by region

It is somewhat difficult to discern trends in HSD appropriations by region. As Table 10 illustrates, appropriations per region fluctuated significantly in several regions during the 1971/76 and 1983/86 periods. Two points are nonetheless worth noting: first, the percentage of appropriations in the LARO region has remained relatively constant; second, combined appropriations to Africa (MERO, EARO and WARO) have increased from 18.5% in 1971/76 to 24.2% in 1983/86. Trends are also difficult to discern during the period 1983 to 1986 (Table 11) except for an increase in appropriations in East Africa and decreases in Asia, Latin America and the Caribbean.

# TABLE 9

# RECIPIENT INSTITUTIONS WITH FIVE OR MORE HS GRANTS

	Number of Grants	\$ Value of Grants
Recipient Institution		
Centro Nacional de la Familia (CENFA) Chi Chulalongkorn University - Thailand Fundacion para la Educacion Superior (FES Colombia	le 5 6 ) 9 7	\$976,905 360,682 3,090,110 1,033,350
Kenya Medical Research Institute (KLHKI) Mahidol University - Thailand National Institute of Immunology - India PAHO Population Council PATH/PIACT Universidad de Chile including Instituto	13 5 10 18 14 9	783,405 3,262,093 1,555,899 7,680,504 1,920,762 898,125
de Nutricion y lechnologia de los Alimentos (INTA) University of Alexandria - Egypt University of Hong Kong University of Malaya University of Nairobi University of the West Indies (UWI) WHO Yonsei University - Korea	9 5 13 11 8 15 9	972,845 231,165 3,572,535 908,095 1,280,562 4,129,000 561,339
Total for Recipient Institutions with five+ grants	166	33, 217, 376
HSD Total to October, 1987	615	82 <b>,9</b> 40,198
TOTAL FOR RECIPIENT INSTITUTIONS WITH FIVE+ GRANTS AS A PERCENTAGE OF HSD TOTAL	27.0%	40.0%

# Table 10

# HEALTH SCIENCES DIVISION

# APPROPRIATIONS BY AREA

	\$ <u>1971</u>	<u>- 76</u> %	\$ 1977	<u>- 82</u> %	\$ <u>1983</u>	<u>- 86</u> %
ASRO	1,650,202	11.3	5,380,864	20.1	8,896,751	22.6
SARO	4,354,517	29.7	2, 921, 585	10.9	3,854,479	9.8
LARO	4,288,825	29.3	6,729,078	25.1	11,883,408	30.2
MERO	641,282	4.4	1,539,800	5.7	1,868,805	4.7
EARO	415,492	2.8	1,636,160	6.1	5,612,865	14.3
WARO	1,650,403	11.3	856,335	3.2	2,061,145	5.2
HEAD/GLOBAL	1,651,336	11.2	7, 721, 810	28.9	5, 186, 162	13.2
			· · · · · · · · · · · · · · · · · · ·			
TOTAL	14,652,057	1 <b>0</b> 0.0	26,785,632	100.0	39, 365, 615	1 <b>0</b> 0.0

Table 11

HEALTH SCIENCES DIVISION

APPROVED PROJECTS BY REGION

	-	1983/84 \$	<b>X</b> (of\$)	-	1984/85 \$	%(of\$)	-	1985/86 \$	%(of\$)	***=	1986/87 \$	% ( of\$ )	
ASRO	34	3, 540, 375	44.8	19	1,972,497	23.3	18	1,992,626	19.7	17	1,529,754	13.4	
SARO	1	214,720	2.7	S	236, 645	2.8	9	513, 949	5.1	2	1,281,345	11.3	
LARO	14	2,071,140	26.2	14	2, 587, 755	30.7	23	4,824,556	47.7	21	2,413,896	21.2	
MERO	4	553, 540	7.0	-	59, 840	0.7	9	487,845	4.8	4	676,180	5. 9	
EARO	2	611, 250	7.7	13	2, 201, 905	26.0	2 L	349, 475	3.5	21	2, 723, 628	23.9	
WARO	2	226,820	2.9	Q	654, 585	7.7	4	167,145	1.7	2	698, 845	6.1	
HEAD /GLOBAL	Û.	683, 130	8.7	R	745, 675	8.8	2	1,775,244	17.5	6	2,081,211	18.2	Pa
													ge 52
TOTAL	65	7, 900, 975	100.0	61	8, 458, 902	100.0	67	10, 110, 840	100.0	82	11,404,859	100.0	

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### (e) Appropriations by country

While the analysis of the distribution of appropriations by region does not provide much useful data, a summary of appropriations by country does reveal some interesting information. The Health Sciences Division has funded 20 or more projects in seven countries (see Table 12). Together these countries account for 31.2% of the total number of grants made by HSD and 23.5% of the dollar value of grants made since the inception of the Division. Four of these seven countries are in Southeast Asia. Support to countries in this region has been particularly strong because the Health Sciences Division has had a permanent Regional Representative in ASRO since 1978 and also because research institutions in these countries are relatively well established.

At the opposite end of the scale, of the 72 developing countries having received HSD grants to date, 25 countries have received three or less grants. This also gives some indication of the degree of scatter in HSD support (the so-called 'shot gun' approach), which again can be attributed to the Division's overall responsiveness and a lack of coordinated country-level support, both at the division and Centre level.

In Table 13, we have grouped the countries in which HSD grants have been made into country categories used by the World Bank. It is very interesting to note that the largest portion of HSD support (38.4% of number of grants and 31.7% of the total amount of the total appropriations) has been provided to countries in the "lower middle-income" category. A considerably smaller number of grants has been made to the low income countries. This may reflect the relative weakness of research institutions and the extent of practical difficulties encountered in performing research in these countries.

In looking at Table 13, one also observes that HSD appears to have provided a considerable degree of support to institutions in developed countries. This is somewhat misleading, however, as explained in notes 3, 4 and 5 in the table.

# TABLE 12

# COUNTRIES HAVING RECEIVED 20 OR MORE HS GRANTS

Country	# of <u>Grants</u>	Total Grant Amounts
INDIA	21	4, 024, 460
KOREA	23	1,730,184
MALA YS IA	25	3, 340, 810
KENYA	26	3,053,779
PHILIPPINES	27	2,075,051
INDONES IA	32	2,010,333
THAILAND	38	3, 282, 085
TOTAL FOR COUNTRIES WITH 20+ GRANTS	192	19, 516, 702
HSD TOTAL	615	82,940,195
COUNTRIES WITH 20+ GRANTS AS A PERCENTAGE OF HSD TOTAL	31.2%	23.5%

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# TABLE 13

# HSD GRANTS BY COUNTRY CATEGORY <u>1971 - 1987</u> (Note 1)

		Number of Grants	\$ Value of Grants
1.	Low-Income Countries (LICs) - (No	te 2)	

Bangladesh Burkina Faso	5 2	696,375 372,244
Burma	1	160,350
Central African Republic	1	87,860
China	6	837, 280
Ethiopia	7	1,055,010
Gambia	1	54,850
Ghana	4	308, 798
Haiti	4	589, 115
India	21	4, 024, 460
Kenva	26	3 053 779
Malawi	1	28,900
Mali	Ē.	1 080 047
Mozambique	1	52 550
Nonal	Î A	262 172
Dakietan	1	270 200
Fakistali Sanagal		426 510
Sionna Loono	4 E	420, 510
Sierra Leone	J 10	093, 323
JET LATIKA Sudan	12	1,0/9,/49
Suu dri Tan ran i a	/ F	005,495
	5	595, 222
logo	2	100, /20
Uganda	4	420, 980
Zaire	4	751,613
Zambia	6	868,018
Total Low-Income Countries	140	19,235,922

# TABLE 13 (Cont'd)

# HSD GRANTS BY COUNTRY CATEGORY 1971 - 1987

Number	\$ Value
of Grants	<u>of Grants</u>

# 2. Lower Middle-Income Countries (LMICs) - (Note 2)

Bolivia	6	518,240
Botswana	5	595,450
Cameroon	2	252, 385
Chile	19	2,740,549
Colombia	18	4,361,720
Costa Rica	5	1,109,640
Cuba	3	459,950
Dominica	2	149,566
Dominican Republic	. 4	334,890
Ecuador	6	582,630
Eqvot	17	1,523,087
Guatemala	5	591,020
Guvana	1	275,500
Honduras	7	723, 341
Indonesia	32	2,010,333
Jamaica	8	1,191,022
Lebanon	1	31,000
Lesotho	1	217,000
Liberia	2	177,820
Mauritius	1	<b>28,9</b> 65
Morocco	1	72,100
Nigeria	6	273,105
Papua New Guinea	1	118,600
Paraguay	3	453,200
Peru	6	1,057,085
Philippines	27	2,075,051
Swaziland	1	90,200
Thailand	38	3,282,085
Tunisia	4	310,930
Z imb ab we	4	647,275

Total Lower Middle-Income Countries

236

26,253,737

# TABLE 13 (Cont'd)

# HSD GRANTS BY COUNTRY CATEGORY 1971 - 1987

Number	\$Value
<u>of Grants</u>	<u>of</u> Grants

# 3. <u>Upper Middle-Income Countries (UMICs)</u> - (Note 2)

Algeria Argentina Brazil Hong Kong Iran Israel Korea Malaysia Mexico Panama Singapore Trinidad & Tobago	1 10 13 6 2 3 23 25 19 4 17 5	118,500 949,444 1,410,140 260,405 291,200 427,755 1,730,184 3,340,810 1,530,940 386,930 2,700,013 990,590
Venezuela	2	54,900
Total Upper Middle-Income Countries	130	14,191,811
4. Other Countries		
Belgium Canada (Note 2) Switzerland (Note 3) United Kingdom USA (Note 4)	3 42 16 3 45	386,829 4,649,505 4,139,000 159,300 13,924,092
Total Other Countries	109	23, 258, 726
Total all Countries	615	82, <del>9</del> 40, 198

### TABLE 13 (Cont'd)

### HSD GRANTS BY COUNTRY CATEGORY 1971 - 1987

Note 1: Includes grants from 1971 to October, 1987.

Note 2: For purposes of grouping countries, we have used the World Bank classification system as per the World Bank's 1987 World Development Report, pp. 202-203. This report groups countries according to GNP per capita, as follows:

> LICs - 1985 GNP per capita less than \$400 US LMICs - 1985 GNP per capita between \$400 - \$1,600 US UMICs - 1985 GNP per capita between \$1,600 - \$7,500 US

- Note 3: Most projects in Canada are in fact the Centre-Administered portion of research projects, often multi-country projects. Actual Canadian projects include a series of activities with the University of Waterloo in the preliminary stages of handpump design, epidemiology training for Chinese researchers in Canada and health research and management courses for developing-country researchers given at McMaster University and the University of Toronto.
- Note 4: Grants in Switzerland are HS grants made to WHO, i.e. primarily to the WHO Human Reproduction, Tropical Disease Research and Diarrheal Diseases Control Programmes.
- Note 5: Grants to the United States include grants to the Population Council, PATH, etc. In these instances, because the recipient organization is in the United States, the grants are nominally shown as US grants, but in most cases the funds were actually provided for research to be performed in developing countries. The \$13,924,092 shown as US grants includes grants to the Population Council relating to Norplant and the development of an Anti-Conceptive Vaccine, as well as grants to PAHO. In total, to date the Division has invested \$6.1 million in the development of Norplant and \$5.3 million in the development of the vaccine.

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# 2. Project focus

A subject analysis of the research supported by the HSD indicates that, until recently, most projects were unidimensional and problem (subject or discipline) oriented. For the purposes of this review, each project was assigned a set of 'themes' to describe its principal focus. The Project Information Systems (PINS) abstracts for each project was used to draw up a list of 11 themes:

- i) Technology/intervention development: development of a technology and/or intervention under controlled conditions.
- ii) Descriptive epidemiology studies: studies that define prevailing health status and health services in the field.
- iii) Clinical epidemiology trials.
- iv) Managerial aspects of HS interventions: actual means of managing a situation--for example, how communities collect and use water--or a study that recommends how a situation can be better managed.
- v) Socio-economic/cultural aspects: a study that examines how these parameters affect a health condition or the transfer/implementation of a technology or intervention.
- vi) Evaluation of interventions: field testing of a technology or intervention (measuring its technological performance).
- vii) Environmental assessment: study of baseline environmental conditions and/or changes that have taken place as a result of an intervention.
- viii) Health impact: the impact of the technology or intervenion on health. This also covers studies examining the impact of prevailing conditions on health.

- ix) Research-building capacity: a project that aims, explicitly or implicitly, to increase the ability of the research team or institution to plan and carry out research.
- x) Training: a project that gives individuals formal training.
- xi) Other: a project that cannot be classified in the categories above.

A member of each sector reviewed and assigned themes to each project. Although the classification of project is subjective, particularly for earlier projects that predate current staff, the PINS abstracts provided enough information to classify most projects fairly accurately.

The number of themes per project in each sector is presented in Table 14. It is clear that, except for Tropical and Infectious Diseases, the focus of projects has tended to broaden: the number of themes per project has increased over time. This finding is corroborated by the data presented in Table 15 which shows the total number of projects by number of themes.

# TABLE 14

 Х <sub>с</sub>	NUMBER OF THE MES/PROJECT BY PERIOD AND SECTOR				
	71-76	<u>77-82</u>	83-86	AVERAGE	
MC H/ HSR	1.55	2.06	2.24	2.02	
TID	2, 11	2.11	2.02	2.07	
WSS	1.21	1.94	2.73	2.21	
OHET	-	2.77	3.35	2.73	
A VERAGE	1.37	2.07	2.40	2.28	

### Table 15

NUMBER OF THEMES		FISCAL Y	EARS	
	<u>71-76</u>	<u>77-82</u>	83-86	Ţ
1	45	62	67	174
2	27	73	75	175
3	7	32	41	80
4+	1	22	47	70
Т	80	189	230	499

TOTAL NUMBER OF PROJECTS BY PERIOD ACCORDING TO NUMBER OF THEMES

While the number of unidimensional projects has increased since the Centre's creation, the percentage of one-theme projects decreased from 56% to 29%. In comparison, the percentage of projects covering three or more themes increased from 10% to 38%.

The primary focus of projects also changed (Table 16) from period to period. At 24%, themes 1 and 6--Technology/intervention development and Evaluation of performance of the technology/intervention--for example, are cited most often for projects supported during 1971/76. Descriptive epidemiology is the next most popular at 14% of the total, followed by Managerial aspects of interventions at 9%. The projects tended to be highly concentrated: the first three themes account for 62% of the total number of themes assigned.

For the projects supported in 1977/82, Descriptive epidemiology is the most frequently assigned theme at 18% (N=392), followed by Technology intervention/development at 16%, and Evaluation of the performance of the technology/intervention, also at 16% of the total. These three themes account for 50% of the total, a decrease from the previous period.

For the 1983/86 period, the ordering of themes had again changed. Evaluation of performance of the technology intervention now ranked first at 18% of the total (N=553), followed by Descriptive epidemiology at 16%, and Management aspects of interventions at 13%, for a total fo 47% of the total number of classifications.

### Table 16

ORDER OF THEMES BY SECTOR AND FISCAL YEAR				
	RANK	71-76	THEME NO. 77-82	83-86
MCH/HSR	1	6	8	6
	2	1	6	2
	3	2	4	5
TID	1	2	2	2
	2	6	6	6
	3	1	1	9
WSS	1	1	1	1
	2	4	4	4
	3	9,5	9	7
OHET	1	-	6	2
	2	-	2	7
	3	-	7	6
DIVISION	1	1,6 (24%)	2 (18%)	6 (18%)
	2	2 (14%)	1 (16%)	2 (16%)
	3	4 (9%)	6 (16%)	4 (13%)

This data highlights the following trends:

i) The first and second ranked themes for the Tropical and Infectious Diseases (TID) and the Water Supply and Sanitation (WSS) sectors remained constant: Descriptive epidemiology and Evaluation of performance of technology/intervention development for TID, and Management aspects of interventions for WSS. In both cases, however, the share of these themes declined over the study period, from 65% to 51% for TID and 83% to 43% for WSS, indicating that the projects' focus had broadened to include other themes.

- ii) For OHET, three themes were consistently ranked first (Descriptive epidemiology, Evaluation of performance of technology /intervention, and Environmental assessment), although the order of ranking changed during the two study periods for which data is available. The total share of these themes decreased from 80% to 70% only, indicating that the vast majority of projects in this sector still covered these themes, although they increased in scope.
- iii) The order of themes changed markedly for the MCH/HSR sector, although Evaluation of performance of technology/intervention placed in the top three during the three study periods. Projects in this sector seem to have shifted emphasis from the development and field testing of technologies and interventions to studies concerned with socio-economic evaluations of interventions. The concentration of the three highest ranking themes also declined from 66% to 57% between the first and third study periods.

This analysis shows that HSD projects have broadened their focus over time, and that the Division as a whole has shifted its focus from technology/intervention development and field testing to an evaluation of these technologies and interventions, the development of health profiles, and the examination of the management aspects of interventions.

To summarize, a concerted effort has been made to support projects with broader frames of reference. The tendency, however, is to support single subject (although perhaps multiple theme) projects as one-time events with research groups that often do not receive subsequent research grants. There are many reasons why these groups may not submit further research proposals, but the fact remains that many of the projects supported by the HSD are one-shot affairs. Because development is a long-term process, this tendency may impede the build up of a critical mass of research resources needed to bring about real improvements in the health and well-being of communities.
## B. Assessment of available resources

The major resources available to the Health Sciences Division in carrying out its mandate are the budget and staff (i.e. person-years).

#### 1. Budget

A summary of the overall HSD budget since the inception of the Division, broken down into regular program, cooperative program, DAP, technical support and division management components, is provided in Table 17. This table illustrates that HSD's combined program budget (regular programs and COOP) has grown rapidly since the 1980 fiscal year. However, during this same period, technical support and division management combined appropriations, as a percentage of the total program budget, have decreased from 24.8% to 21.6%. It is also interesting to note that the total HS budget, as a percentage of the total Centre budget, decreased considerably in 1976 with the transfer of the Demography and Population program to the Social Sciences Division. The HS share of the total Centre budget then remained at this lower leve for nine years and began to gradually increase, at the Board's encouragement, in 1985.

For information purposes, an inflation-adjusted table of the HSD budget components has also been provided (Table 18). It shows that although there appears, in nominal dollars, to have been a considerable increase in the regular programs budget, in "real" dollars, 1987 regular program appropriations are at approximately the same level as 1975. TABLE 17 HS APPROPRIMITIONS (000s om itted)

	1971	1972	5701	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987 (Est)
Regular Programs	833	1, 221	3,404	3, 661	4, 996	4,070	3,824	4,045	3, 291	3, 739	6,010	5,801	8, 356	8,006	8, 740	10,421	12,002
Coop Program					,						g	319	668	18	1,371	984	1,150
DARS	88	240	369	552	351	242	176	46	141	76	155	17	301	<b>60</b> 8	381	83	715
Technical Support									667	712	8	1,015	1,105	1,500	1,541	1,795	2,067
Division Mymnt.	202	33	21	<b>3</b> 26	1,058	802	816	764	206	214	231	339	334	386	575	683	173
Total HS	1,108	2,364	4, 344	5,139	6,405	5,020	4,816	4,855	4,305	5,683	7,252	7,645	10,764	10,317	12,608	14,512	16,707
Total HS as a % of Total Centre	19.6%	17.6%	19.2%	15.9%	16.8%	12.8%	11.2%	11. 3%	10.3%	11.4%	11.9%	10.3%	11.5%	10.0%	12.3%	12.5%	13.9%
Total ILRC	5,660	13,432	22,581	32, 313	38, 102	39, 150	43, 016	42, 948	41, 783	49,892	60, 784	74, 394	93,517	102,778	102, 195	116, 310	120, 127

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TABLE 18 INFLATTON ADJUSTED HS APPROPRIATIONS (Note 1) (0005 omitted) 1987

$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
9   26   74   36   65   65   108   141   124   197   216     7   436   108   102   96   129   120   133   187   502   562   624     4   2,770   2,255   2,251   3,058   2,913   3,876   3,563   4,809   4,543   5,043     4   2,770   2,255   2,251   3,058   2,913   3,876   3,563   4,809   4,543   5,043     4   11.34   10.34   11.94   10.35   10.06   12.34   13,675   35,490   36,332   36,270     3   26,095   23,011   24,759   25,668   28,341   33,675   35,490   35,320   36,270
349   338   347   387   398   518   502   562   624     7   436   108   102   96   129   120   133   187   214   233     4   2,770   2,255   2,251   3,058   2,913   3,876   3,553   4,809   4,543   5,043     %   11.3%   10.3%   11.9%   10.3%   11.5%   10.0%   12.5%   13.9%     3   26,095   23,031   24,759   25,668   28,341   33,675   35,490   36,332   36,270
7 436 108 102 96 129 120 133 187 214 233   4 2,770 2,252 2,251 3,058 2,913 3,876 3,553 4,809 4,543 5,043   % 11.3% 10.3% 11.5% 10.0% 12.5% 13.9%   % 11.3% 10.3% 11.5% 10.0% 12.5% 13.9%   3 26,095 23,031 24,759 25,668 28,341 33,675 35,490 36,392 36,392 36,392 36,392 36,392 36,392 36,392 36,270
4 2,770 2,252 2,251 3,058 2,913 3,876 3,563 4,809 4,543 5,043 % 11.3% 10.3% 11.4% 11.9% 10.3% 11.5% 10.0% 12.3% 12.5% 13.9% 3 26,095 23,031 24,759 25,668 28,341 33,675 35,490 33,310 36,332 36,270
x 11.3x 10.3x 11.4x 11.9x 10.3x 11.5x 10.0x 12.3x 12.5x 13.9x 3 26,095 23,031 24,759 25,688 28,341 33,675 35,490 33,310 36,332 36,270
3 26,095 23,031 24,759 25,658 28,341 33,675 35,499 33,310 36,392 36,270

Actual appropriations figures have been adjusted by an inflation factor as measured by changes in the Consumer Price Index as reported by Statistics Canada for the period 1971-1987. Note 1:

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As far as HSD's budget for the next four years is concerned, in conjunction with the preparation of PPR IX, HSD was requested to submit first order and second order budget estimates for the 1988/89 - 1991/92 period. In these estimates, first order figures for 1988/89 were calculated as being the previous year's budget less 10%: these figures were then increased by 5% for each following year. Second order figures were calculated as being equal to the first order estimates plus 20% (Tables 19 and 20).

Table 19

# HEALTH SCIENCES DIVISION PROJECTIONS 1987/88 - 1991/92 \$000

A) First order boundaries (1)

	<u>1987 /88</u>	1988/89	<u>1989 /90</u>	<u>1990/91</u>	<u>1991/92</u>
Regular Program	10,070	10,550	11,075	11,600	12,200
Cooperative Program	<b>9</b> 05	975	1,000	1,100	1,150
DA Ps Regular Coop	500 50	525 50	570 60	590 60	600 70
Technical Support	1,842	1,934	2,030	2,130	2,240
Division Management	555	583	<b>61</b> 0	645	675
		·			
TOTAL	13, <b>9</b> 22	14,617	15,345	16,125	16,935

(1) 1987/88 Budget = 1986/87 Budget less 10%. Budget is increased by 5% in each following year.

B) Second order bo	undaries (1	1)			
	1987/88	1988/89	1989/90	1990/91	<u>1991/92</u>
Regular Program	12,000	12,625	13,200	13,900	14,690
Cooperative Program	1.180	1,235	1,360	1,430	1,500
DAPs Regular Coop	590 60	600 60	620 60	630 60	650 70
Technical Support	2,255	2,320	2,435	2,555	2,600
Division Management	620	700	735	770	800
τοται	16.705	 17. <b>54</b> 0	18,410	19,345	20,310

### HEALTH SCIENCES DIVISION PROJECTIONS 1987/88 - 1991/92 \$000

(1) First order boundaries + 20% (in total)

Table 21 presents a "best guess" of funds available through to 1991/92. This "best guess" is based on the following premises:

- a) The 1987/88 regular program budget allocated to HSD by President's Committee was originally \$12.437 million, an amount exceeding the division's second order boundary. However, this was based on an overall grant reference level of \$108.1 million. We subsequently learned that the overall grant level for 1987/88 will be \$105.9 million. The HSD regular program budget for 1987/88 was consequently reduced by \$185,000 to \$12.252 million.
- b) The last figures obtained from Treasury Board showed that the IDRC grant would increase by almost 8% in 1988/89 and by 7% in the following year. In light of the recent scale-back in the Centre's

projected 1987/88 grant increase and generally tight budget constraints, we based our "best guess" projections on an overall 4% per annum increase in the Centre's grant subsequent to 1988/89.

The "best guess" figures fall roughly near the second order boundary estimates originally calculated in 1986 for PPR VIII. It is interesting to note that although the HSD overall budget will increase by a nominal 22.4% over this period, assuming a 4% rate of inflation, the real rate of growth will be approximately 5.4%. This should result in a slight increase in the HS share of the total Centre budget. As per the indicative planning figures provided in PPR IX\*, the HS share of the Centre's total program budget (excluding DAPs and the Centre reserve) should increase from 15.6% in 1987/88 to 16.0% in 1991/92.

A breakdown of the projected HSD program budget by program for the period 1987/88 to 1991/92 is provided in Table on page in Chapter VI of this document.

Table 21

### HEALTH SCIENCES DIVISION PROJECTIONS 1987/88 - 1991/92 \$000

C) Best	Estim	ate
---------	-------	-----

	1987 /88	1988/89	<u>1989/90</u>	1990/91	<u>1991/92</u>
Regular Program	12,252	13,463	14,000	14,560	15,140
Cooperative Program	1.150	1,200	1,250	1,300	1,350
DAPs Regular Coop	570 60	570 60	<b>59</b> 0 60	<b>61</b> 5 65	640 70
Technical Support	2,057	2,066	2,150	2,235	2,325
Division Management	710	924	960	1,000	<b>1,0</b> 40
				<u> </u>	
TOTAL	16,799	18,283	19,010	1 <b>9,</b> 775	20,565

PPR IX, p. 40

#### 2. Person years

The number of person-years available to HSD in relation to the program budget (one indicator of workload) is depicted in Table 22. As can be seen from this table, appropriations per person-year have increased continuously since the inception of the Division until now and will continue to increase at a rapid rate until 1991, assuming a continuing freeze on person-years. This table also shows what the appropriations per person-year would be during the next four years if additional person-years that will be requested by HSD are approved. In the event that these additional person-years are approved, appropriations per person-year should eventually level off by 1989.

As part of the 1987/88 PWB submission, HSD requested two person-years (PYs): a MERO Regional Representative and an Operations Assistant. Both were denied and the Division has reapplied for the MERO position and a Research Assistant position in its 1988/89 PWB submission. Given the overall staffing freeze in the Centre, it is felt that the division is not likely to be given many new PYs over the next five years. Table 23 shows the actual number of HSD positions and the desired number of positions for the next few years. Despite the anticipated Centre-wide restrictions on PYs, we hope that a limited number of additional professional PYs will be made available to the division in the near future to better cope with the increasing workload, as evidenced by the increasing level of program appropriations. A breakdown of the desired staffing levels, by program and in Chapter VI of this regional office, is provided in Table on p document.

TABLE 22 APPROPRIATIONS VS STAFFING LEVELS

16,490 1991 99 8,024 10,111 11,405 13,152 14,663 15,250 15,860 1990 8 1989 36 1988 36 1987 35 <u>1</u>986 Я <u> 1</u> 285 Ř 198 R <u>8</u> 6,120 9,024 26 <u>198</u> 24 6,043 1981 21 3,739 86 ର 3,291 1979 20 4,045 1978 21 3,824 1971 8 1976 4,996 4,070 8 1975 35 1974 3,661 8 3,404 <u>1973</u> 21 1,821 1972 14 g 1971 N/A Program Appro-priations (Regular Programs & Coop) Approved Person-Years

458.1 375.8 407.3 423.6 440.6 325.9 297.4 130.7 162.1 140.8 142.7 156.5 173.8 192.6 164.6 187.0 287.8 255.0 347.1 236.0 Person-Year (Assuming continuing freeze on person-years) Appropriations per

46

43

40

8

368.8 358.5

381.3

407.3

Person-Years to be Requested by HS Appropriations per Person-Year (Assuming gradual increase in person-years over the 1988/89-1991/1992 period) Page 71

## Table 23

## HEALTH SCIENCES DIVISION DESIRED STAFFING LEVELS 1987/88 - 1991/1992

1.	1987/88	(A) <u>1988/89</u>	1989/90	1990/91	1991/92
Division Management					
Executive and Professional	4	4	4	4	4
Support	7	7	7	7	7
Technical Support					
Professional					
Ottawa	12	12	12	12	12
Regional Offices(B	) 6	7	8	10	11
Support (C)	6	6	9	10	12
TOTAL	35	36	40	43	46

(A) 1987/88 actual.

- (B) Assumes one Regional Representative per regional office in 1988/89. All subsequent new professional staff positions would be in regional offices.
- (C) Includes secretarial, program-related operations and research assistant support, but does not include R.O. support staff assigned to HSD professional staff in the regional offices.

## V. OPERATIONAL AND STRATEGIC ISSUES

The previous sections have reviewed the Health Sciences Division's program and resources, in light of changes occurring in the Division and in IDRC's policy and programming. An attempt was also made to identify priority health research needs in developing countries. Taken together, this information provides a basis from which to assess and, if necessary, reconstruct HSD's program and operational structure. This chapter highlights some issues that need to be considered in planning the content of the Division's program and its complementary organization.

#### A. Responsiveness and the "hands-on" approach

The Centre's responsiveness is its most important feature. It must continue to influence the divisional programs and govern how research proposals are developed. This assumes that the research proposals submitted to IDRC for funding reflect priority concerns in developing countries. In theory, this mode of operation assumes that IDRC staff do not control the content and execution of projects, but, rather, play a supportive role. In actual fact, this assumption is not always valid. How proactive should the Centre become in influencing the nature and direction of research proposals? How much should staff become involved in project development? Centre staff must decide if the proposal addresses a local priority, is relevant to the Division's objectives, of high quality, and can be carried out by the research group. The principal investigator must direct the development and conduct of the research project, however. Insistence on these criteria is one of the features which sets the Centre apart. In applying these criteria, IDRC uses a "hands-on" approach with researchers in project development. This carries the danger that the researcher will respond to IDRC rather than vice-versa. The close working relationships between IDRC staff and researchers appears to be effective, if labour-intensive.

#### B. Capacity building

Another important issue is the role IDRC projects play in building research capacity. On many occasions IDRC program officers are called

on to assist members of the research project team increase their project management skills. This is time-consuming but important in helping researchers in LDCs address major health research issues.

## C. Project size

The Centre is as willing to develop small projects as large ones, realizing that their payoff may be equal. When dealing with research capacity-building, a small project is usually a first step. Using the "hands-on" approach, however, it takes staff as long to develop small projects as large ones: available staff time therefore becomes a major constraint.

#### D. Relevance to beneficiaries

The relevance of research efforts also influences the nature of a divisional program. This not only refers to the "marketability" of project output (whether tangible products or strategies for service development and delivery), but, more importantly, the relevance of the research to meeting basic human needs. PPR VII highlights this concern. It states: "Relative emphasis should be given to research, research-supporting and experimental development activities that have direct relevance to basic human needs". This central tenet of IDRC philosophy must be reflected in the Health Sciences Division's program.

## E. Professional staff

The Centre's comparative advantage depends to a large extent on the expertise of HS professional staff. With the wide focus of the Centre's overall program, this broad range of "in-house" expertise permits a significant degree of flexibility in considering non-conventional problems or themes. The Health Sciences Division's organization and staff should reflect this.

## F. Evaluation

The Division should be more involved in evaluating the output and impact of its projects on the beneficiaries, on national health policies and programs, and on the development process. It could thus ensure that its program remains responsive to the most urgent health research needs. The present system of looking at numbers of projects and appropriations levels, as embodied in the PWB and other Centre documents, is inadequate for this task. An analysis that summarizes data from all Project Completion Reports (PCRs) written since the inception of the Division has been prepared, but the information obtained from this analysis is also not particularly useful in evaluating impact and program planning. A copy of this analysis is available in HSD, if of interest. An alternative means of measuring performance, output, and impact must be found if the Division is to meet Centre objectives.

### G. Program strategy

The review of the Health Sciences Division's current program highlights several weaknesses and strengths, which should assist in reorganizing the Division and its program.

- 1. The geographic spread of HSD projects has been wide but thin (see p. 53 in Chapter IV). Projects have been approved in almost every LDC (with significant exceptions in the MERO and WARO regions. Moreover, only 13% of research institutions supported have received more than one grant. If the Division is to focus a significant portion of its resources on improving the capacity of indigenous researchers to develop, implement and manage research projects, a commitment must be made to support research at specific institutes or organizations over an extended period. One-shot projects do not necessarily strengthen research capabilities enough to ensure subsequent self-reliance.
- 2. Most research projects approved have focused on narrow, unrelated, disciplinary areas. This has prevented us from learning by experience. A theme or cluster approach could more effectively respond to the emerging holistic perception of development. A division-wide

theme, for example, might be the role of health education in changing health-related behaviour. This would include evaluating the strategies used to design and deliver health education programs. Projects encompassing the same theme might be supported in several developing countries, creating a network through which researchers could discuss their experiences. The Division has substantial experience in the "network" approach.

- Although the Division supports community-based projects, the question 3. arises as to whether a significant portion of our resources should be devoted to "community-driven" research. The research strategies and factors. They range from methodolog ies used are critical "community-extractive" methods, whereby the community members are passive subjects, to community-interactive methods, whereby the community members are involved in planning and executing the project. to community-generated and executed projects. The methodology used depends on the problem to be studied. Projects supported by the HSD must focus on priority health research issues, actively involve community members wherever possible, and benefit disadvantaged people.
- Given the resources available, the present division objective is very 4. A narrower focus would perhaps be desirable, such as on broad. diseases or conditions. This would entail supporting a research topic from the design of the intervention to field-testing, modification, evaluation, and application. Most health research funding agencies follow this policy. In spite of its obvious appeal, it is a "top-down" if Mon eover, very few, any, topic-related heal th concept. interventions are effective in the field if they neglect other This has been clearly illustrated by the WHO smallpox factors. eradication program, the expanded program of immunization, the onchocerciasis control program, and so on. Effective technologies do exist, but their existence does not guarantee better health for the poor.

The issue of longer term support for a research concept should receive serious consideration. The Division has stimulated and supported many

research networks but these are usually horizontal. If the Division is to follow a priority research problem from identification to application of results, it should narrow the scope of its program.

The central concept underlying the divisional program is the need to address priority health research issues from a broad, multidisciplinary perspective. The Division must support the development of technologies and strategies to improve health and well-being, as well as research which addresses the critical factors affecting their success or failure in the community.



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Figure 2



HEALTH SCIENCES DIVISION (1983-1987)

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Figure 3

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HEALTH SCIENCES DIVISION (1987 - 19



dollars Millions of

Health Sciences Appropriations



dollars

Health Sciences Appropriations



Percent

7

INPUTS TO HEALTH



From H.L. Blum, *Planning for Health*, Human Sciences Press, 1974, p 3.



The Ecology of Health and Development: The Health Sciences Division Model

Adapted from H.L. Blum, *Planning for Health*, Human Sciences Press, 1974, p 3.

The width of the four ... input-to-health arrows indicates ... assumptions about the relative importance of the inputs to health. (Slus, 1974, p 3)

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